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SULFAMERAZINE

CLINICAL EVALUATION IN 116 CASES

WENDELL H. HALL, M.D.
AND
WESLEY W. SPINK, M.D.
MINNEAPOLIS

Investigations have continued in a search for more therapeutically effective sulfonamides which at the same time provoke less toxic manifestations. In our experience at the University of Minnesota Hospitals, sulfadiazine has proved to be less toxic than sulfathiazole, sulfapyridine and sulfanilamide. Nevertheless it has been found that renal complications are not uncommonly associated with sulfadiazine therapy. For this reason the therapeutic possibilities of the monomethyl derivative of sulfadiazine were investigated. This report presents the results that have been obtained in the treatment of 116 patients with sulfamerazine and its sodium salt.

Sulfamerazine, the monomethyl derivative of sulfadiazine, is 2-sulfanilamido-4-methylpyrimidine. The dimethyl derivative of sulfadiazine is known as sulfamethazine and is 2-sulfanilamido-4,6 dimethyl-pyrimidine. Sulfamerazine was first described by Robin and his associates.[1] They found that sulfamerazine was two and one half times as soluble in water as sulfadiazine. Its acetylated form had almost the same solubility as free sulfamerazine in water and was almost twice as soluble in water as acetylated sulfadiazine. Roblin and his associates [2] also prepared sulfamethazine and observed that it was two and one half times as soluble in water as sulfamerazine. Sulfamerazine and sulfamethazine were also prepared by Sprague, Kissinger and Lincoln.[3] Sulfamethazine has been synthesized by Caldwell, Kornfeld and Donnell.[4] They found that its water solubility at 29 C. was twice that reported by Sprague and his associates [3] in water at 37 C.

Roblin and his group [1] observed that higher maximum blood levels could be established in white mice with sulfamerazine than with identical doses of sulfadiazine. With equivalent doses of sulfamethazine they obtained the same maximum blood levels as with sulfamerazine.[2]

Welch and his associates [5] studied the pharmacology and toxicology of sulfamerazine in laboratory animals and in man. The minimum lethal dose in white mice was reported to be about the same as for sulfadiazine. In chronic toxicity experiments with dogs and monkeys no tissue changes were found unless the average eight hour concentration in the blood exceeded 30 mg. per hundred cubic centimeters. The toxic effects were in the most part dependent on precipitation of the drug in the renal tubules, pelves or ureters. Free sulfamerazine was found to be more soluble in urine than free sulfadiazine, and acetylated sulfamerazine was more soluble in urine than acetylated sulfadiazine. The solubility of all these compounds in urine was greatly increased when the p_H of the urine was raised from 6.5 to 7.5. Sulfamerazine was more rapidly and more completely absorbed from the gastrointestinal tract than sulfadiazine. In comparison with sulfadiazine, sulfamerazine was also more slowly excreted in the urine and therefore appeared in lower concentrations. The degree of acetylation was the same as with sulfadiazine. The production of neuropathologic changes in chickens was no greater with sulfamerazine than with sulfadiazine. When sulfamerazine was administered to human subjects it appeared that adequate blood levels could be quickly attained without the necessity of giving the sodium salt intravenously and that such levels could be maintained by giving only one or two doses by mouth daily.

Goodwin, Peterson and Finland [6] reported that after 5 Gm. of sulfamerazine was given orally to 3 men the blood levels rose more rapidly and higher levels were reached and were sustained longer than after an equal dose of sulfadiazine. Most of the drug in the blood was found to be in the plasma. More sulfamerazine was excreted in the urine than sulfadiazine, and more of the sulfamerazine in the urine was in the conjugated form.

Roblin and his associates [1] concluded that sulfamerazine was more effective than sulfanilamide, sulfapyridine and sulfathiazole in white mice having infections due to streptococci, staphylococci and pneumococci. They believed that the superiority of sulfamerazine was due to the higher blood levels obtained with this compound. Goodwin, Peterson and Finland [6] reported that sulfamerazine was bacteriostatic in vitro against type III pneumococci in low concentrations of the free drug.

The sulfamerazine was generously supplied by Sharp and Dohme, Inc.

From the Division of Internal Medicine, University of Minnesota Hospitals and Medical School.

This study was successfully completed because of the cooperation of the staff members in the various departments at the University of Minnesota Hospitals. The sulfamerazine concentrations were carried out under the direction of Dr. G. T. Evans, director of the laboratories. Mrs. Ruth F. Curry, in charge of the bacteriology laboratory, was responsible for most of the bacteriologic data.

1. Roblin, R. O., Jr.; Williams, J. H.; Winnek, P. S., and English, J. P.: Chemotherapy: II. Some Sulfanilamido Heterocycles, J. Am. Chem. Soc. **62:** 2002 (Aug.) 1940.

2. Roblin, R. O., Jr.; Winnek, P. S., and English, J. P.: Studies in Chemotherapy: IV. Sulfanilamidopyrimidines, J. Am. Chem. Soc. **64:** 567 (March) 1942.

3. Sprague, J. M.; Kissinger, L. W., and Lincoln, R. M.: Sulfanilamido Derivatives of Pyrimidines, J. Am. Chem. Soc. **63:** 3028 (Nov.) 1941.

4. Caldwell, W. T.; Kornfeld, E. C., and Donnell, C. K.: Substituted 2-Sulfanilamidopyrimidines, J. Am. Chem. Soc. **63:** 2188 (Aug.) 1941.

5. Welch, A. D.; Mathis, P. A.; Latven, A. R.; Benson, W. M., and Shiels, E. H.: Sulfamerazine (2-Sulfanilamido-4-Methylpyrimidine): I. A Comparison of Sulfamerazine with Sulfadiazine on the Basis of Absorption, Excretion and Toxicity, J. Pharmacol. & Exper. Therap. **77:** 357 (April) 1943.

6. Goodwin, R. A., Jr.; Peterson, O. L., and Finland, Maxwell: Absorption and Excretion of Sulfamethyldiazine (2-Sulfanilamido-4-Methylpyrimidine) in Human Subjects, Proc. Soc. Exper. Biol. & Med. **51:** 262 (Nov.) 1942.

As yet no reports are available concerning the value of sulfamerazine in the treatment of human infections. McCartney and his associates [7] reported on the pharmacology and clinical trials of sulfamethazine in 88 human infections. They found that sulfamethazine was effective against infections due to pneumococci, meningococci and gonococci. They reported no serious toxic complications. Jennings and Patterson [8] found that sulfamethazine was effective in 27 children when it was used against infections due to pneumococci and meningococci. No serious toxic reactions were encountered.

MATERIALS AND METHODS

The various types of clinical conditions in 116 patients treated with sulfamerazine or its sodium salt are presented in table 1. Of the 116 patients, 15 were children under 1 year of age. In every case, attempts were made to isolate the infectious agent responsible for the disease.

The 47 patients with pneumonia made up the largest group treated. The sputum when available was examined in all instances, and if pneumococci were present the Neufeld method of typing was used. Blood cultures were obtained from all patients with pneumonia before chemotherapy was instituted. Data were obtained from the patients on age, time of onset of illness, extent of the pulmonary involvement, complications, x-ray films of the chest during therapy, frequent blood sulfamerazine levels and effect of the therapy on the clinical course, temperature and blood morphology. The oral dose of sulfamerazine in the treatment of adults and older children consisted of an initial dose of from 3 to 4 Gm. followed by 1 Gm. every six hours. This dosage was maintained until the temperature had remained normal for forty-eight hours and then was reduced to 0.5 to 1 Gm. every eight hours. The drug was discontinued on the fifth to the seventh day. In infants and smaller children the initial dose was 0.05 Gm. per pound of body weight (not over 4 Gm.) and the maintenance dose was 0.05 Gm. daily per pound of body weight given in divided doses until the temperature returned to normal. Then the dose was gradually reduced, and the drug was discontinued on the fifth to the seventh day. We did not administer an alkali with the sulfamerazine to these patients. In 1 instance type specific antipneumococcus rabbit serum was administered in conjunction with the sulfamerazine. To patients who were nauseated or extremely toxic, the initial dose was given intravenously in the form of the sodium salt. Four Gm. of this drug was given as a 5 per cent solution in isotonic solution of sodium chloride. In all instances the patients were then maintained on oral therapy.

TABLE 1.—*Summary of Types of Infections in 116 Patients Treated with Sulfamerazine*

Disease	No. of Cases
Lobar and atypical pneumonia	47
Pneumococcic bronchitis	8
Staphylococcic sepsis (bacteremia, 2 cases)	11
Influenzal meningitis (type B)	2
Meningococcic meningitis	3
Streptococcic meningitis	2
Streptococcic sepsis (bacteremia, 1 case)	31
Miscellaneous infections:	
Chronic brucellosis	3
Urinary tract infections	2
Postoperative (sterile) meningitis	1
Actinomycosis	1
Pneumococcic endocarditis (type I)	1
Acute laryngotracheobronchitis	3
Infectious mononucleosis	1
	116

Eight patients with acute bronchitis apparently due to pneumococci were treated with sulfamerazine. There was no evidence of involvement of the lung parenchyma in any of these patients. One of these patients had a bacteremia. The dosage of sulfamerazine was the same as used for patients with pneumonia.

Eleven patients with staphylococcic sepsis were given sulfamerazine. Two patients had a bacteremia, 1 in association with osteomyelitis and thyroiditis, the other related to multiple subcutaneous abscesses. The remaining patients were treated because of osteomyelitis, postoperative wound infections, infected burns, carbuncles, decubitus ulcers and perirectal abscess. The dosage employed was the same as with pneumonia but in most cases was given over a longer period of time. Surgical drainage of the abscesses was performed when fluctuation was present.

Two patients with influenzal meningitis (type B), 3 with meningococcic meningitis and 2 with streptococcic meningitis were treated with sulfamerazine. An attempt was made to maintain a blood level of free sulfamerazine between 15 and 20 mg. per hundred cubic centimeters. In some of the cases oral therapy was supplemented by intravenous therapy. Type specific serum was given intravenously to the patients with influenzal meningitis. Type specific serum was given intravenously to 1 patient with meningococcic meningitis.

Thirty-one patients were treated for streptococcic sepsis with sulfamerazine. Twenty-three of these patients had acute tonsillitis or pharyngitis due to hemolytic streptococci. These patients were given 3 Gm. initially and then 1 Gm. every eight hours for forty-eight hours. The other infections included cellulitis, otitis media, sinusitis, scarlet fever and 1 instance of septicemia due to beta hemolytic streptococci.

The concentration of the free sulfamerazine in the blood was determined by the method of Bratton and Marshall.[9] In the patients with meningitis simultaneous determinations were made on the blood and spinal fluid.

PNEUMONIA AND ACUTE BRONCHITIS

Table 2 presents the results of therapy with sulfamerazine in 55 patients having lobar pneumonia, atypical pneumonia or acute bronchitis. There were 32 patients with lobar pneumonia or bronchopneumonia, all of whose sputums contained micro-organisms consistent morphologically with pneumococci. The pneumococci were successfully typed in 19 of the 32 patients. Three of these patients died. One of the patients had a type I pneumococcus pneumonia and bacteremia. This person was a chronic alcoholic addict with delirium tremens as a complication and had consolidation of the right middle and lower lobes. There were type I pneumococci in the blood culture. In addition to receiving sulfamerazine, he was given type specific antipneumococcus rabbit serum intravenously. After the slow injection of 60,000 units of serum the patient had a convulsion, became pulseless and died. The

7. McCartney, D. W.; Smith, G. S.; Luxton, R. W.; Ramsay, W. A., and Goldman, J.: Sulfamethazine: Clinical Trial of a New Sulfonamide, Lancet **1**: 639 (May 30) 1942.

8. Jennings, P. A., and Patterson, W. H.: Sulfamethazine: Clinical Trials in Children, Lancet **2**: 308 (Sept. 12) 1942.

9. Bratton, A. C., and Marshall, E. K., Jr.: New Coupling Component for Sulfanilamide Determination, J. Biol. Chem. **128**: 537 (May) 1939.

conjunctival test with 1:10 dilution of the serum was negative. A second patient had a lobar pneumonia of the entire right lung due to type I pneumococci. This patient was given sulfadiazine initially but developed oliguria and nitrogen retention. Sodium sulfamerizine was then administered intravenously. His urine output increased, but death ensued. Autopsy revealed a carcinoma of the stomach, and the entire right lung was collapsed and necrotic. One child with lobar pneumonia due to type XXIX pneumococci recovered but died later of Schüller-Christian disease. The postmortem examination revealed no evidence of pneumonia.

TABLE 2.—*Bacteriology in 55 Patients with Lobar Pneumonia, Atypical Pneumonia and Acute Bronchitis Treated with Sulfamerazine*

Bacteriology	No. of Cases	Comment
Pneumonia		
Pneumococcus type		
I	4	1 necrosis of lung, death; 1 bacteremia, death
III	2	1 otitis media
IV	1	
V	3	
VI	2	
VII	1	
XI	1	Thyrotoxicosis, jaundice
XVII	1	
XXVIII	1	
XXIX	1	Schüller-Christian disease, death
XXXIII	2	
Untyped	13	1 bacteremia; 1 pleural effusion; 1 toxic myocarditis
Hemolytic streptococci	1	
Nonhemolytic streptococci	2	
Unknown etiology	12	1 cardiac failure, death; 1 otitis media (Staphylococcus albus)
Bronchitis		
Pneumococcus type		
IV	2	
VIII	1	Sinusitis
XII	1	Bacteremia
Untyped	4	
	55	

One patient with thyrotoxicosis developed a lobar pneumonia due to type XI pneumococci after thyroidectomy. Therapy with sulfadiazine was instituted, but he developed severe jaundice and delirium. Sulfamerazine was then administered and his jaundice and delirium cleared rapidly. His improvement was striking. Of the 2 patients with lobar pneumonia due to type III pneumococci, 1 had had a bilateral otitis media, which improved rapidly following chemotherapy. In both cases the pneumonia responded quickly to sulfamerazine therapy, although in 1 there were frequent recurrences because of an underlying bronchiectasis with cavitation.

The following case is presented in detail because it illustrates well the response seen in the majority of cases of pneumococcic lobar pneumonia:

CASE 1.—S. K., a man aged 23, a student, entered the University Hospitals after an illness of three days' duration characterized by chills, fever, cough and sweats. He had had pain in his right upper chest and blood streaked sputum for two days. He had vomited several times. He was dyspneic and moderately cyanotic. Decreased resonance, bronchial breathing, moist rales and increased vocal fremitus were found over the apex of the right lung. X-ray examination of his chest revealed consolidation of the entire right upper lobe. Numerous type I pneumococci were found in his sputum but the blood culture remained sterile. The patient showed an excellent response to sulfamerazine. His temperature fell rapidly and he felt subjectively improved. The physical findings in his chest rapidly disappeared. He was discharged eight days after his admission to the hospital.

Attempts to type pneumococci in 13 of the patients with lobar pneumonia or bronchopneumonia were unsuccessful by both direct and indirect methods. All the 13 patients recovered and responded satisfactorily to sulfamerazine therapy. One of these patients had a bacteremia due to unidentified gram negative bacilli and gram positive diplococci, 1 developed a pleural effusion and another had a transient auricular fibrillation.

One patient with hemolytic streptococcus pneumonia recovered following therapy with sulfamerazine. Two patients with bronchopneumonia had numerous colonies of nonhemolytic streptococcus in the sputum and responded satisfactorily following the administration of sulfamerazine.

Twelve patients with so-called atypical pneumonia of doubtful etiology were treated. As was to be anticipated, the therapeutic response was variable, and in most instances the drug did not appear to have any beneficial effect on the clinical course. One of the 12 patients died from cardiac failure. One patient with an otitis media due to Staphylococcus albus responded in excellent fashion. Both the otitis media and the pneumonia rapidly subsided coincident with the use of sulfamerazine.

During the past winter 8 patients were seen who had a pneumococcic bronchitis. Physical examination and x-ray films of the chest failed to demonstrate any involvement of the lung parenchyma. All these patients had fever, cough, bloody or purulent sputum and chest pain. All were treated with sulfamerazine with satisfactory results. They were given the same dose as used for patients with frank signs of pneumonia. No toxic reactions were observed. One of these patients had a type XII pneumococcus bacteremia with 40 colonies per cubic centimeter of blood. Following therapy with sulfamerazine he recovered readily from his bronchitis, and his blood steam was quickly rendered sterile. However, after a lapse of several days he developed

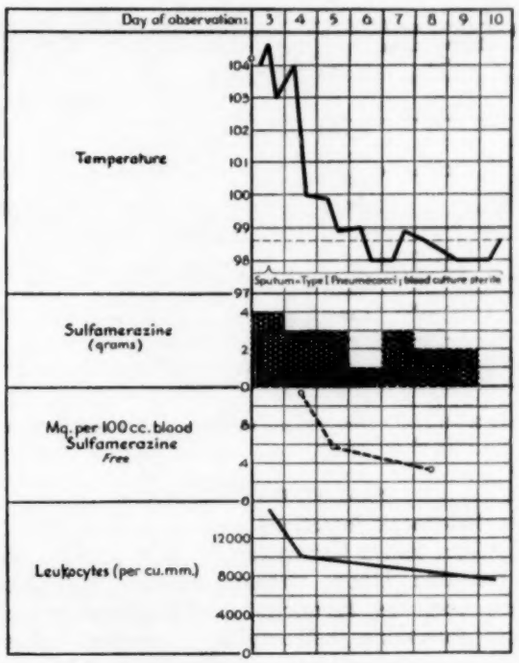

Chart 1.—Result of sulfamerazine therapy in case of type I pneumococcus pneumonia.

an abscess in the right inguinal region from which type XII pneumococci were recovered. Surgical incision and drainage was necessary. Another patient with an acute pneumococcic sinusitis and bronchitis due to type VIII organisms responded well in all respects.

In general, the effect of sulfamerazine on the clinical course of pneumonia resembled that which we have encountered with sulfadiazine. In most instances of lobar pneumonia the temperature curves approached normal within twenty-four to forty-eight hours. The drug was well tolerated by all the patients. In some cases in which a toxic reaction followed sulfadiazine therapy, sulfamerazine was well tolerated.

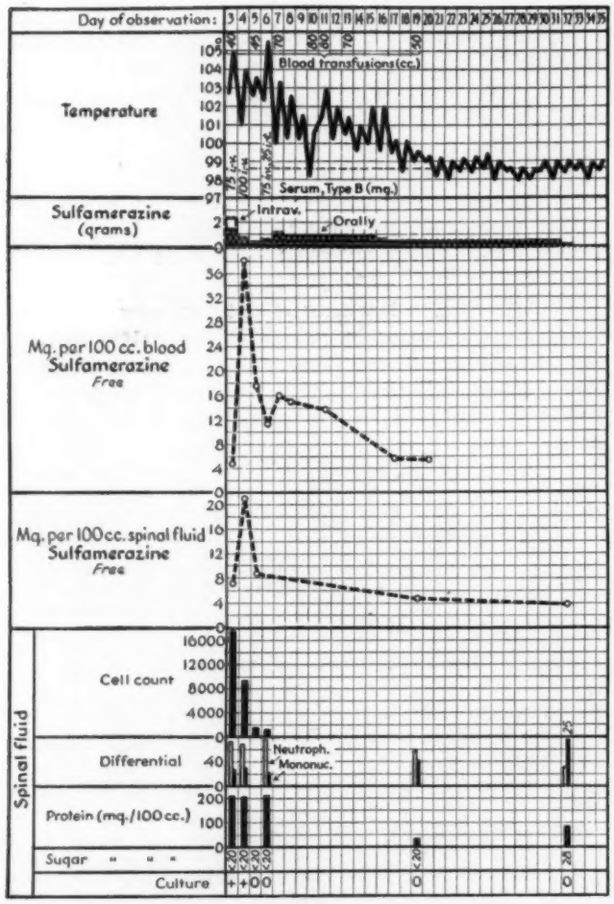

Chart 2.—Sulfamerazine therapy of infant aged 2 months with type B influenza bacillus meningitis.

STAPHYLOCOCCIC SEPSIS

Staphylococcic infections were treated in 11 patients, 2 of whom had a bacteremia. The 9 patients without demonstrable blood stream invasion had localized lesions such as furuncles, carbuncles, postoperative wound infections, osteomyelitis, infected burns and decubitus ulcers. When combined with adequate surgical drainage, satisfactory results were obtained with the majority of these patients. However, at the present time we feel that sulfathiazole is the sulfonamide of choice for staphylococcic infections. In all instances the sulfamerazine was given by mouth. The drug was not applied locally.

One of the patients with bacteremia was hospitalized because of leukemia. Several subcutaneous abscesses developed and were associated with chills, a septic type of fever and a bacteremia. Sulfamerazine was given orally in the same dosage used in the treatment of pneumonia. The blood culture became sterile and the temperature returned to normal. The subcutaneous abscesses receded very slowly without surgical drainage. The other patient with a staphylococcic bacteremia also had an acute osteomyelitis. The patient was somewhat less febrile while taking sulfamerazine, but the bacteremia persisted and she developed an acute thyroiditis.

INFLUENZAL MENINGITIS

Two infants with influenzal meningitis (type B) were treated successfully with sulfamerazine. The first infant was a girl aged 11 months under the care of Dr. Erling Platou. Therapy was started with sulfadiazine, and type specific rabbit serum was given intravenously. A good clinical response was obtained, but after six days of therapy she developed oliguria. She was then given sulfamerazine. Her urine output increased and she recovered.

The following is a summary of the clinical course in the second case:

CASE 2.—R. B., a boy aged 2 months, entered the University Hospitals in the service of Dr. Irvine McQuarrie. He had become irritable and cyanotic two days before admission to the hospital. Some opisthotonos had been noted and his temperature had reached 104 F. He had had an upper respiratory infection one and one-half weeks before entry, which had subsided promptly. The child had a moderate opisthotonos on admission to the hospital. He was dehydrated. His neck was rigid and his respirations were irregular. The anterior fontanel was bulging. The ears, throat and lungs were normal. The optic disks were edematous. There was a systolic murmur at the apex of the heart. The abdomen was normal. The upper extremities were flexed and rigid. Turbid spinal fluid was removed under a pressure of 8 mm. of mercury. Gram negative pleomorphic bacilli were seen in the spinal fluid on stained smears, and cultures yielded type B influenza bacilli. The child was given sulfamerazine, parenteral fluids, blood transfusions, type specific serum and oxygen. For three days he had clonic convulsions. After eight days his clinical condition appeared improved, and repeated spinal fluid examinations revealed a drop in the leukocyte count. On the seventeenth hospital day the spinal fluid sugar exceeded 20 mg. per hundred cubic centimeters. He became afebrile and improved gradually. He gained 1 Kg. in weight while in the hospital. No definite evidence of residual cerebral damage was found. Although the infant vomited frequently during the early part of his hospital stay, there was no evidence that this was induced by sulfamerazine.

MENINGOCOCCIC MENINGITIS

Three patients with meningococcic meningitis were treated with sulfamerazine. All these patients recovered. One, a male student aged 18, was treated at the Student's Health Service under the care of Dr. Ruth Boynton and Dr. C. A. McKinlay. He was given sulfadiazine initially and had a favorable response. On the eighth day of sulfadiazine therapy he developed crystalluria, right flank pain and hematuria. He was then given sulfamerazine. The renal symptoms subsided promptly and he recovered.

The second patient, a man aged 51, received only sulfamerazine and recovered after a prolonged illness. Vomiting occurred frequently during the early part of his illness, but this subsided while he was still receiving sulfamerazine. An indwelling catheter led to a urinary tract infection after the sulfamerazine was discontinued. This infection cleared up after a brief course of sulfathiazole.

The third case was of interest from several aspects and is presented in more detail:

CASE 3.—M. S., a woman aged 21, was admitted to the University Hospitals because of recurrent headaches and convulsions of five years' duration. The neurologic examination was essentially negative, and a diagnostic lumbar puncture revealed normal spinal fluid. She was discharged but returned to the hospital six days later. She stated that she had had a severe and persistent headache since the lumbar puncture. Four days before her second admission to the hospital she had noted the onset of fever and back pain. One day later her neck became stiff, and deafness and tinnitus appeared in her left ear. She appeared dehydrated and very ill. A rotatory nystagmus was present. Her hearing was reduced in her left ear, and her neck was rigid. The heart, lungs and abdomen were normal. Kernig's sign was positive bilaterally. The initial lumbar puncture revealed cloudy spinal fluid under a pressure of 20 mm. of mercury. Meningococci were found in the spinal fluid by stained smears and culture. She was given 5 Gm. of sodium sulfamerazine intravenously initially, and this was followed by 1 Gm. of sulfamerazine orally every three hours. Her fever subsided slowly by lysis. Her headache persisted for several days and was associated with nausea and vomiting. These symptoms could not be correlated with the sulfamerazine therapy. Her neck rigidity subsided and the nausea, vomiting and headache gradually disappeared. Although she made an excellent recovery, a reduction of hearing remained in her left ear.

STREPTOCOCCIC MENINGITIS

There were 2 patients in this series who had meningitis which appeared to be due to streptococci. The first patient was a boy aged 10 who presented the picture of an acute meningitis associated with a transient generalized rash. Although no organisms could be isolated from his spinal fluid by smears or cultures, hemolytic streptococci were cultured from his nose and throat. He had an excellent clinical response with sulfamerazine therapy. After thirteen days of chemotherapy his leukocyte count dropped to 2,400 with 37 per cent neutrophils, 56 per cent lymphocytes, 6 per cent monocytes and 1 per cent eosinophils. The sulfamerazine was discontinued, and his leukocyte count promptly rose to 7,400.

The other patient developed an acute meningitis following an operation for a ruptured appendix. The spinal fluid was sterile on culture. His condition gradually grew worse in spite of sulfamerazine therapy, and he died. The postmortem examination revealed a purulent meningitis with abscesses in the brain and liver. Gamma streptococci were cultured from the brain, spinal fluid, liver and spleen.

STREPTOCOCCIC SEPSIS

The second largest group of patients treated with sulfamerazine had infections due to streptococci. One of these patients had a bacteremia due to beta hemolytic streptococci. There were 600 colonies per cubic centimeter of blood. This infection developed as a result of an infected decubitus ulcer. The patient was given sodium sulfamerazine subcutaneously, and the blood cultures became sterile for several days. Hemolytic streptococci again appeared in the blood cultures, and the patient died after a prolonged illness. Permission for an autopsy was refused.

One patient with bilateral otitis media, and another with acute sinusitis, both due to beta hemolytic streptococci, were successfully treated with the drug. One man, aged 87, with an extensive cellulitis and lymphangitis due to a hemolytic streptococcus infection of one foot, recovered following therapy with sulfamerazine.

Twenty-three patients with acute tonsillitis and pharyngitis due to hemolytic streptococci were treated with sulfamerazine at the Student's Health Service. Most of these patients were given 3 Gm. initially followed by 1 Gm. every six hours for forty-eight hours. The clinical response was excellent in most of these cases. However, several of these patients continued to have hemolytic streptococci in their throats and had subsequent throat infections after a short interval of time.

Four patients with scarlet fever were given sulfamerazine. One of them was also given 90,000 units of streptococcus antitoxin intramuscularly. All of them had hemolytic streptococci in their throats. Following

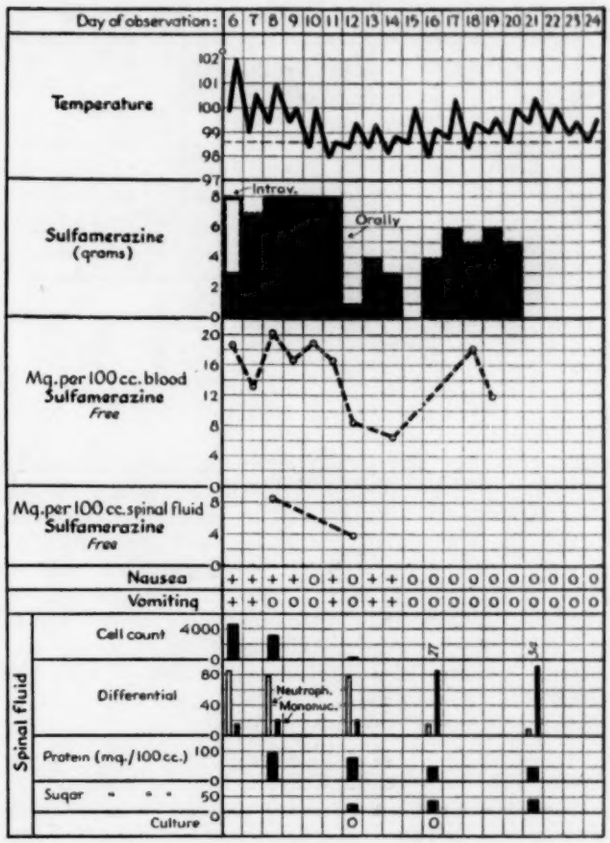

Chart 3.—Result of sulfamerazine therapy in case of meningococcic meningitis.

therapy with sulfamerazine the fever subsided rapidly, the skin rash diminished within twelve to twenty-four hours and the patients felt subjectively improved. No visceral complications were encountered in any of these patients, and no toxic manifestations occurred as a result of chemotherapy. Repeated throat cultures, however, revealed that in some instances streptococci persisted in their throats. The following case illustrates these points well:

CASE 4.—B. G., a man aged 22, a student, had a backache, nausea, headache and fever for one day. He had a rash for twelve hours. He did not appear extremely ill. His pharynx was decidedly injected and his cervical nodes were enlarged. His tongue was red, and there was a circumoral pallor. There was an erythematous rash on his abdomen, chest, arms and legs. Soon after his admission to the hospital he had a chill and a fever up to 103.8 F. Streptococci were cultured from his throat. His response to sulfamerazine was excellent. His fever subsided promptly, his rash disappeared within twelve

hours and he felt well. No evidence of cardiac or renal complications was found. However, a throat culture revealed beta hemolytic streptococci at the conclusion of the sulfamerazine therapy.

MISCELLANEOUS INFECTIONS

Several infections of miscellaneous types were treated. Three patients with chronic brucellosis, including 1 patient with a brucella spondylitis, were given

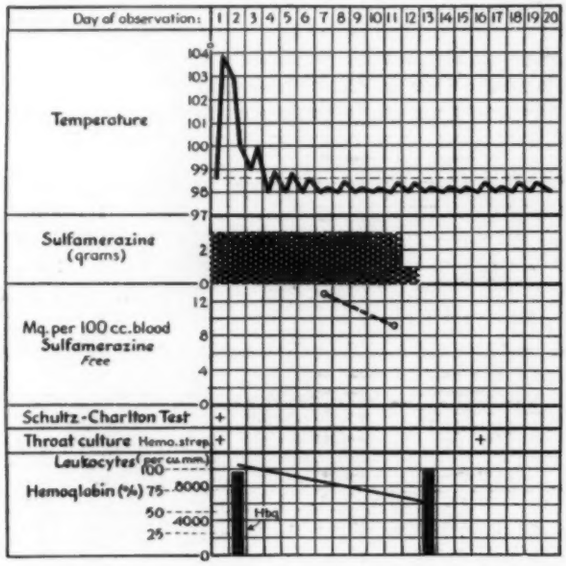

Chart 4.—Sulfamerazine therapy in scarlet fever.

sulfamerazine. The patient with the spondylitis and 1 patient without a localized lesion responded moderately well; both became afebrile and felt subjectively improved. The third patient showed no benefit. Two patients with urinary tract infections were treated. Both infections were due to hemolytic streptococci and responded satisfactorily. One infant was treated because of clinical evidence of meningitis developing after the surgical removal of a lumbar myelomeningocele. The spinal fluid was sterile and, although the infant recovered, the value of chemotherapy could not be assessed. One patient with abdominal and pulmonary actinomycosis was given sulfamerazine without benefit.

One of the most interesting patients was a middle aged housewife who had a lobar pneumonia which was controlled after two courses of sulfathiazole. She then developed an acute endocarditis, and type I pneumococci were cultured from her blood. Sulfamerazine was given to her but she died after a stormy course. Autopsy revealed no evidence of pneumonia, but there was a large vegetation on the mitral valve.

Three children with acute laryngotracheobronchitis were treated. Staphylococci and nonhemolytic streptococci were found in their throat cultures. Two of these patients recovered rapidly; the third child gave no response to chemotherapy, and recovery was prolonged. One patient with infectious mononucleosis improved coincident with the use of sulfamerazine.

ABSORPTION AND DISTRIBUTION

Our studies have indicated that sulfamerazine when given orally will lead to a higher blood level in a shorter interval of time than equal doses of sulfadiazine. Adequate blood levels could be maintained with sulfamerazine given at longer intervals than with sulfadiazine. The amount of the sulfamerazine appearing in the urine or feces was not quantitated in any of the patients. When the sodium salt of sulfamerazine was given intravenously, higher blood levels were attained in a shorter time than with equal doses of sulfamerazine given by mouth or sodium sulfamerazine given subcutaneously. In a few instances some difficulty was experienced in maintaining adequate blood levels of free sulfamerazine even with the aid of intravenous injections of sodium sulfamerazine. This appeared to be accounted for in part by excessive conjugation of the drug. The amount of the conjugated drug in the blood was not determined routinely.

In several cases the amounts of the free sulfamerazine in the blood and spinal fluid were determined simultaneously. The amount of free sulfamerazine in the spinal fluid averaged 50 to 60 per cent of the amount in the blood.

TOXICITY

The toxic manifestations encountered in the treatment of 116 patients with sulfamerazine and its sodium salt are given in table 3. The most frequent evidence of toxicity was nausea and vomiting. Although this occurred in 5 cases, in most instances we were unable to attribute it definitely to the sulfamerazine. The drug was discontinued in only 1 of these cases because of this complication. In 3 cases secondary fever developed which appeared to be due to sulfamerazine; in 2 of these a rash was associated with the fever. The skin eruption was maculopapular in type and was scattered over the entire trunk and extremities. The fever and rash subsided promptly when the drug was discontinued. In 1 child a transient leukopenia and granulocytopenia occurred.

Because of its increased solubility in urine and slower rate of excretion it was hoped that the occurrence of renal complications would be eliminated by the use of sulfamerazine in the place of sulfadiazine. Two of the patients developed back pain, hematuria, crystalluria and reduced urine output when sulfamerazine was given orally. The first patient was treated because of an atypical pneumonia. He had a duodenal ulcer and was nauseated; consequently his fluid intake was low. After receiving 24 Gm. of sulfamerazine by mouth he developed left flank pain, microscopic hematuria, crystalluria and oliguria. He was given parenteral fluids, and therapy with the drug was continued. All his symptoms disappeared promptly. The second patient had

TABLE 3.—*Toxic Manifestations Encountered in a Group of 116 Patients Treated with Sulfamerazine*

Manifestation	No. of Patients
Nausea and vomiting	5
Drug fever	3
Dermatitis	2
Leukopenia and granulopenia	1
Gross hematuria and anuria	1
Oliguria	1

a fluid intake which seemed adequate, but she developed bilateral flank pain, gross hematuria, crystalluria and anuria after she had received 17 Gm. of sulfamerazine orally. Cystoscopy was performed and the lower ends of both ureters were found to be occluded by large crystals. Ureteral catheters were left in place, and she was given intravenous sodium bicarbonate solution to insure an alkaline urine. Following this procedure a flow of urine was reestablished. Her urine output was maintained over 3,000 cc. a day by forcing fluids parenterally. She was discharged from the hospital six days later without any evidence of renal damage.

It is important to point out that this patient also received ammonium chloride for the treatment of an acute bronchitis. The p_H of her urine was found to be 4.6. It is not unlikely that the highly acid urine was a major factor in causing a precipitation of crystals along the urinary tract.

No evidence of peripheral neuritis or other neuropathologic disturbance was encountered in any of our patients which was attributed to sulfamerazine. This is in distinct contrast to the earlier experience of others with sulfamethylthiazole.

COMMENT

During the treatment of 116 patients having a variety of infections an attempt has been made to compare sulfamerazine with sulfadiazine with respect to its pharmacology, therapeutic effectiveness and toxicity. Adequate blood concentrations can be maintained with smaller doses of sulfamerazine than with sulfadiazine. Because sulfamerazine is retained in the body for a longer period of time than sulfadiazine, doses of the former may be given at less frequent intervals. Sulfamerazine appears to be just as effective in the therapy of pneumococcic pneumonia as sulfadiazine. Sulfamerazine usually caused a more abrupt fall in temperature than occurred with sulfadiazine. Sulfamerazine also appeared to be just as effective as sulfadiazine or sulfapyridine in the treatment of meningitis due to type B influenza bacillus or the meningococcus. Infections due to hemolytic streptococci responded quite satisfactorily to sulfamerazine, and in this respect the results were similar to those obtained with sulfadiazine. Sulfathiazole is more effective than either sulfamerazine or sulfadiazine in staphylococcic infections. Toxic reactions due to sulfamerazine were no more frequently encountered than with sulfadiazine. Sulfamerazine provoked fewer reactions than we had previously encountered with sulfathiazole, sulfapyridine or sulfanilamide. Although sulfamerazine and its acetylated form are more soluble in urine than the comparable forms of sulfadiazine, two of the patients developed renal complications due to precipitation of the drug in the form of crystals within the urinary tract.

Recent investigations would indicate that crystalluria due to sulfadiazine may be prevented, or at least reduced, by administering sufficient quantities of an alkali so that the p_H of the urine is maintained at 7.5 or higher.[10] To achieve such an alkaline urine when therapeutic doses of sulfadiazine are being utilized, it has been recommended that from 10 to 20 Gm. of sodium bicarbonate should be administered in divided doses every twenty-four hours. As a result of a group of preliminary observations, we are in agreement with the foregoing recommendation. It would also appear that alkalization is a valuable prophylactic procedure for patients receiving sulfamerazine. This is well illustrated in the following example:

A woman aged 33 at the University Hospitals had subacute bacterial endocarditis due to streptococci of the viridans group. Sulfonamide therapy had failed to clear the blood stream of bacteria. It was decided to give a large dose of sodium sulfamerazine in an attempt to control the infection. She was given 3 Gm. of sodium bicarbonate five times a day, and the twenty-four hour fluid intake was maintained around 5 liters. Twenty-five Gm. of sodium sulfamerazine was given intravenously. The twenty-four hour fluid intake on this day was 5,300 cc. and the urinary output was 1,700 cc. The following twenty-four hour intake of fluid was 4,050 cc. with an output of 3,505 cc. of urine. The maximum concentration of sulfamerazine in the blood was 68 mg. of the free drug. The hydrogen ion concentration of the urine was maintained above a p_H of 8. At no time were sulfamerazine crystals observed microscopically in freshly voided specimens of urine. There was no evidence of gross or microscopic hematuria, and the patient had no symptoms referable to the urinary tract. She had several emeses, complained of a headache, and appeared mentally confused and depressed for a short time. The procedure failed to sterilize her blood.

On the basis of this and similar observations, we have recommended at the University Hospitals that in patients receiving sulfadiazine or sulfamerazine a fluid intake should be maintained so that the urinary output during a period of twenty-four hours ranges between 1,000 and 2,000 cc. At the same time, enough sodium bicarbonate should be administered so that the p_H of the urine is 7.5 or more. Obviously, such a procedure is carried out in patients whose clinical condition does not contraindicate these procedures. This applies particularly to patients having renal dysfunction or cardiac failure. It should be emphasized that renal complications due to sulfapyridine, sulfathiazole, sulfadiazine and probably sulfamerazine may be due to factors other than the precipitation of crystals. There is considerable evidence that renal failure may be associated with a direct toxic effect of the sulfonamides on the renal parenchyma and also due to hypersensitivity phenomena. It is doubtful that alkalization would be of much benefit under such circumstances.

Sulfamerazine appears to be tolerated quite well by children and small infants. No toxic reactions were encountered in 15 infants under 1 year of age.

CONCLUSIONS

1. Sulfamerazine was administered to 116 patients having a variety of clinical conditions. Fifteen of these patients were infants under 1 year of age.

2. Sulfamerazine appeared to be as effective as sulfadiazine in the therapy of 40 cases of pneumococcic pneumonia or bronchitis. Sulfamerazine was less effective than sulfathiazole in the treatment of staphylococcic sepsis. Thirty-three patients with streptococcic infections responded as well to sulfamerazine as a comparable group did to sulfadiazine.

3. Two cases of meningitis due to type B influenza bacilli and 3 patients with meningococcic meningitis recovered following therapy with sulfamerazine.

4. Compared to sulfadiazine, when sulfamerazine was given orally adequate blood concentrations necessitated smaller doses given less frequently.

5. Sulfamerazine does not appear to be any more toxic than sulfadiazine. The drug did not produce any demonstrable neurologic complications. Sulfamerazine caused less nausea and vomiting than sulfapyridine, and fewer skin eruptions and instances of drug fever than sulfathiazole.

6. Two instances of nonfatal urinary tract complications were produced by sulfamerazine. The complication appeared to be due to the extrarenal precipitation of crystals resulting in the mechanical obstruction of a free flow of urine. There is evidence that an adequate fluid intake and alkalization of the urine may prevent such complications.

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THE SIMPLIFIED TREATMENT OF GONOCOCCIC OPHTHALMIA NEONATORUM WITH CHEMOTHERAPY

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Cases of gonococcic ophthalmia neonatorum continue to appear in spite of the routine instillation of silver nitrate into infants' eyes at birth. The records of the New York City Department of Health [1] show that a total of 213 cases of gonococcic ophthalmia were reported from 1938 to 1942 (through October). Evidently, then, the disease is still a serious problem.

Previous to the use of the sulfonamides in the treatment of gonococcic ophthalmia of the newborn, the disease was prolonged, treatment was exhausting and complications were frequent, often resulting in blindness. Therapy ranged from repeated copious lavages with various antiseptic solutions to cauterization of the conjunctivas with silver nitrate and even to canthotomy and midtarsal incision. Local measures were occasionally supplemented with intramuscular injections of nonspecific proteins.[2] Sulfanilamide was first used in the treatment of this disease in the form of a weak solution for local irrigation.[3] Mullen [4] used the drug orally as well as locally in solution, while Panneton [5] insufflated powdered sulfanilamide or sulfapyridine into the conjunctival sac. In the past two years effective and rapid cures have been reported with the oral use of sulfonamides by Lewis,[6] Wong,[7] Sweet [8] and others. All these investigators also used local instillations of mild protein silver, mercurochrome or other antiseptics, topical application of silver nitrate and frequent irrigations.

TABLE 1.—*Treatment of Gonococcic Ophthalmia Neonatorum with Sulfathiazole (July 1942 to April 1943 Inclusive)*

	Birth Weight		Day of Onset	Number of Eyes	Duration of Symptoms, Days	Negative Smear, Day	Days of Therapy	Complications
	Lbs.	Oz.						
1	6	13	1	1	3	3	6	None
2	2	14	3	1	2	2	9	None
3	7	5	6	2	2	1	2	None
4	6	0	5	2	2	2	2	None
5	5	4	4	1	4	1	4	None
6	5	8	2	1	2	2	2	None
7	8	12½	5	1	2	1	3	None
8	4	11	13	1	4	1	4	None
9	7	12	6	1	2	1	2	None
10	2	0	5	1	1	1	3	None

TABLE 2.—*Comparative Value of the Three Methods of Therapy*

	Group 1	Group 2	Group 3
Number of cases	14	14	10
Duration of symptoms, days	12-32	2-5	1-4
Negative smear, day	6-46 (?)	1-7	1-3
Days of therapy	5-42	2-7	2-9
Number of complications	5	1	0

A comparative study of three groups of cases of gonococcic ophthalmia neonatorum at Harlem Hospital is presented in order to demonstrate the simplification and efficacy of the new therapy of the disease. In all cases the criteria for diagnosis were edema and inflammation of the lids, purulent discharge and the presence of gram negative intracellular diplococci in the smear of the discharge. The criteria for cure were the disappearance of these symptoms and the absence of gram negative diplococci from smears taken from the conjunctival sac.

In the first group (January 1934 to December 1937 inclusive) there were 30 cases, of which 16 were transferred to other hospitals with special eye services when the diagnosis of gonococcic ophthalmia was made. The remaining cases, treated at this hospital with local and general measures before the advent of chemotherapy, are summarized in table 3. In all the unaffected eye was protected with some such device as a Buller shield, while the infected eye was treated with repeated copious irrigations of boric acid solution and frequent instillations of 10 to 25 per cent mild protein silver. The duration of the illness ranged from six to forty-six days. In 5 cases (35.7 per cent) complications developed. In 1 baby arthritis of the left great toe and of both wrists appeared on the sixth, seventh and eighth days of therapy respectively. The joints were aspirated and gram negative diplococci were found in smears of the pus. Another infant developed a subcutaneous metastatic abscess which had gram negative intracellular diplococci in the aspirated pus. Two babies contracted gonococcic infection of the second eye on the second and fifth days of therapy respectively. The ankles of one became swollen but were not aspirated and so the condition was not proved to be gonococcic arthritis. In a fifth case, in which both eyes were involved at the onset, a corneal ulcer on one eye developed in spite of mild protein silver, boric acid irrigation and silver nitrate applied topically. Two patients were taken home on the fifth day before cure was effected, and 1 patient died of infectious diarrhea of the newborn on the sixteenth day of treatment with the ophthalmia still present.

In the second group (January 1940 to June 1942 inclusive) there were 31 cases, of which complete records were available for only the 14 presented in table 4. These babies were all given sulfonamides orally in divided doses four to six times a day to a total daily dose of 1 to 1½ grains per pound of body weight. Seven infants received sulfapyridine, 4 sulfathiazole, 1 sulfadiazine, 1 sulfanilamide and 1 sulfathiazole for a day followed by sulfapyridine for four days. All were treated with frequent irrigations of the affected eye, 13 with boric acid solution, 1 with isotonic solution of sodium chloride. The unaffected eye was protected with a shield. Ten patients received instillations of 10 to 20 per cent mild protein silver. Only 1 baby (7.1 per cent), treated with sulfanilamide, developed a

From the Department of Pediatrics, Harlem Hospital.

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8. Sweet, L. K.: Chemotherapy in Acute Gonococcal Conjunctivitis, Am. J. Ophth. **25**: 1487-1492 (Dec.) 1942.

complication, involvement of the second eye on the second day of treatment, but both eyes cleared up after five more days of the same therapy. The duration of the disease ranged from one to seven days.

In the last group (July 1942 to April 1943 inclusive) there were 10 cases. All were treated uniformly regardless of the infant's weight, the severity of the symptoms and whether one or both eyes were involved at the onset. As soon as a case was diagnosed, it was isolated in a separate nursery. Sulfathiazole was given by mouth in the form of an emulsion with acacia, 3 grains (0.2 Gm.) of the drug initially followed by 1 grain (0.06 Gm.) every four hours until symptoms disappeared and the smears from the conjunctival sac showed no gram negative diplococci. The eyes were simply cleansed from without, to remove pus when necessary, with a pledget of absorbent cotton moistened with isotonic solution of sodium chloride. No attempt was made to force the eyes open or to irrigate them, and the unaffected eye was not protected mechanically. The babies all tolerated the drug well, showing no loss of appetite or weight nor any abnormal findings in their urines. Since the duration of symptoms and positive smears was only one to four days, the therapy was brief (in 2 cases treatment was continued for six and nine days respectively, through error). Therefore routine

TABLE 3.—*Treatment of Gonococcic Ophthalmia Neonatorum Without Sulfonamides (January 1934 to December 1937 Inclusive)*

	Birth Weight		Day of Onset	Number of Eyes	Treatment	Duration of Symptoms, Days	Negative Smear, Day	Days of Therapy	Complications
	Lbs.	Oz.							
1	7	12	5	1	25% mild protein silver, 2% silver nitrate, boric acid irrigation	22	23	23	Arthritis of left great toe and both wrists
2	5	14	3	2	15% mild protein silver, boric acid irrigation	17	16	17	Metastatic subcutaneous abscess
3	8	6	3	1	25% mild protein silver, boric acid irrigation	Taken home uncured	Unknown	13	Other eye, arthritis of ankles
4	6	6	1	2	20% mild protein silver, 1% silver nitrate, boric acid irrigation	Taken home uncured	Unknown	5	Unknown
5	4	6	2	1	20% mild protein silver, 2% silver nitrate, boric acid irrigation	17	17	17	None
6	7	0	5	1	20% mild protein silver, 2% silver nitrate, boric acid irrigation	Taken home uncured	Unknown	5	Unknown
7	4	6	3	1	25% mild protein silver, 1% silver nitrate, boric acid irrigation	Died before cure (diarrhea)	Not achieved	16	None
8	8	6	3	1	25% mild protein silver, boric acid irrigation, 1% atropine	Taken home uncured	Unknown	21	Other eye
9	7	15	5	2	15% mild protein silver, boric acid irrigation	Taken home with discharge still present	13	16	None
10	5	5	7	2	25% mild protein silver, 1% silver nitrate, boric acid irrigation, 0.5% atropine, milk injection (intramuscular)	32	32	42	Corneal ulcer
11	2	14½	1	2	15% mild protein silver, boric acid irrigation	15	46 (?)	15	None
12	8	12	9	1	25% mild protein silver, boric acid irrigation	12	6	12	None
13	5	8	1	2	20% mild protein silver, boric acid irrigation	18	10	18	None
14	6	11	5	1	20% mild protein silver, boric acid irrigation	12	11	12	None

TABLE 4.—*Treatment of Gonococcic Ophthalmia Neonatorum with Sulfonamides and Local Therapy (January 1940 to June 1942 Inclusive)*

	Birth Weight		Day of Onset	Number of Eyes	Treatment	Duration of Symptoms, Days	Negative Smear, Day	Days of Therapy	Complications
	Lbs.	Oz.							
1	2	12	3	1	Sulfapyridine, 10% mild protein silver, boric acid irrigation	4	1	3	None
2	4	9½	3	1	Sulfapyridine, boric acid irrigation	4	2	4	None
3	8	8	10	1	Sulfathiazole, 15% mild protein silver, boric acid irrigation	4	2	5	None
4	6	2	5	1	Sulfathiazole, 15% mild protein silver, boric acid irrigation	5	1	5	None
5	3	5	1	1	Sulfanilamide, 10% mild protein silver, boric acid irrigation, 0.5% atropine	5	7	5	Other eye
6	3	11	3	1	Sulfathiazole, sulfapyridine, boric acid irrigation	2	2	5	None
7	4	14	1	1	Sulfapyridine, 15% mild protein silver, boric acid irrigation	2	2	3	None
8	7	6	4	1	Sulfapyridine, 15% mild protein silver, boric acid irrigation	4	4	3	None
9	6	9	3	1	Sulfapyridine, 15% mild protein silver, boric acid irrigation	3	1	2	None
10	7	14½	2	1	Sulfapyridine, 15% mild protein silver, boric acid irrigation	4	4	3	None
11	7	3½	2	1	Sulfapyridine, boric acid irrigation	2	1	3	None
12	7	8	1	1	Sulfathiazole, 20% mild protein silver, boric acid irrigation	4	2	5	None
13	4	7	5	1	Sulfadiazine, boric acid irrigation	4	3	6	None
14	7	9	3	1	Sulfathiazole, 20% mild protein silver, saline irrigation	4	1	7	None

blood counts and drug levels in the blood were not determined. All infants in this group were observed in the hospital for at least one week after being cured. No complications or relapses were noted during this time or in the follow-up clinic. These cases are presented in table 1.

The results of the methods of treatment of the three groups of patients are compared in table 2.

SUMMARY AND CONCLUSIONS

1. The sulfonamides used in the treatment of gonococcic ophthalmia neonatorum have greatly decreased the duration of the disease and have practically eliminated complications.

2. Patients are now treated routinely at this hospital only with sulfathiazole by mouth. Local therapy and mechanical protection of the unaffected eye are apparently unnecessary.

3. Sulfathiazole in doses of 1 grain per pound of body weight daily cured our patients and prevented complications.

THE TREATMENT OF MENINGOCOCCIC INFECTIONS WITH SULFADIAZINE AND SULFAMERAZINE

(SULFAMETHYLDIAZINE, MONOMETHYLSULFADIAZINE)

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Many observers have attested the value of sulfadiazine in meningococcic infections.[1] A previous report from this hospital[2] on the treatment of meningitis with sulfadiazine included 24 patients with meningococcic meningitis. Since then we have continued to treat all patients admitted to the Gallinger Municipal Hospital with sulfadiazine[3] or, since March 1943, alternately with sulfamerazine and sulfadiazine. During this time there has been an increasing incidence of meningococcic infections in the District of Columbia as well as in the country as a whole. Through May 31, 1943 we had treated 118 patients with meningococcic meningitis (including the 24 cases already reported) and 3 patients with meningococcemia.

The present report includes a summary of the results obtained with sulfadiazine and sulfamerazine together with an analysis of the factors which influenced recovery or death. We have also studied the severity of the disease as the epidemic progressed and have attempted to correlate this with the results of therapy.

Miss Ruth Mayer rendered technical assistance.

From the George Washington Medical Division (Drs. Lepper and Dowling) and the Pediatric Service (Dr. Sweet), Gallinger Municipal Hospital, and the Departments of Medicine and Pediatrics, George Washington University School of Medicine.

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2. Feldman, H. A.; Sweet, L. K., and Dowling, H. F.: Sulfadiazine Therapy of Purulent Meningitis, War Med. **3**: 995 (Nov.) 1942.

3. Sulfadiazine and sulfamerazine for this study were supplied by the Lederle Laboratories, Inc.

PROCEDURE

Routine procedures in the diagnosis and treatment of these patients have been carried out as follows: As soon as a patient believed to have meningitis was admitted to the ward, a lumbar puncture was performed. On the specimen of spinal fluid obtained several examinations were made. A cell count and a Pandy test were done. Smears of the centrifuged sediment were made. They were stained with both methylene blue and Gram's stains. If organisms believed to be meningococci were seen, typing by means of the Neufeld technic was attempted. Cultures were planted in tryptose-phosphate or tryptose-phosphate-hemoglobin broth and on chocolate agar slants. A quantitative dextrose determination was made on the clear supernatant fluid by an application of Benedict's modification of the Folin-Wu method.[4] After this study had established a presumptive diagnosis of meningococcic meningitis, a blood culture was obtained and treatment was begun. An initial oral dose of 6 Gm. of sulfadiazine or sulfamerazine was followed by 1 Gm. every four hours in adults. A proportionately smaller dose was given to children. For severely ill patients, especially those too stuporous to swallow, or for those who were vomiting excessively, the initial dose and a varying number of following doses were given as a 0.5 to 1 per cent solution of the sodium salt of the drug intravenously or subcutaneously. The sulfonamide drug was continued until the patient was afebrile for approximately seven days unless some indication for stopping the drug developed sooner. Frequent hemograms, urinalyses and blood urea nitrogen and blood sulfonamide determinations were obtained during the period of drug administration. Follow-up lumbar punctures were done on the second hospital day and again when discharge was contemplated. If the cell count had not fallen to 30 cells per cubic millimeter the puncture was repeated at weekly intervals until that level was reached. At this time the patient was allowed out of bed and was subsequently discharged. Additional lumbar punctures were done only when recovery was not progressing satisfactorily. Each spinal fluid specimen was examined in the same way as the one obtained by the initial lumbar puncture.

Patients who responded poorly to this regimen in the first twenty-four to forty-eight hours were considered candidates for serum therapy. After reevaluation of the clinical status of the patient and the laboratory findings, serum was given intravenously if it was believed indicated.

RESULTS

There have been a total of 118 cases of meningitis treated here using this routine. The etiologic agent in every case was established by one or more of the following methods: (1) positive spinal fluid culture, (2) a positive blood culture, (3) a smear containing demonstrable typical gram negative intracellular or extracellular organisms. All cases not fulfilling these criteria were omitted from this series. Whenever possible the organisms were typed.[5] Seventy-three group I and 6 group II (alpha) organisms were found.

In addition there have been 3 cases of meningococcemia in which neither meningeal signs or symptoms nor any increase in cells in the spinal fluid occurred. Meningococci were cultured from the blood of all these patients.

4. Benedict, S. R.: The Determination of Blood Sugar, J. Biol. Chem. **64**: 207 (March) 1925.

5. Dr. Sara E. Branham of the National Institute of Health typed many organisms.

Among the 118 patients with meningitis 12 (10.1 per cent) died. Several clinical and laboratory features have been found to be related to prognosis. These factors include age, presence and duration of coma before treatment, number of organisms in spinal fluid and concentration of spinal fluid dextrose on admission and on the second day following therapy. We have measured the speed or recovery by the duration of coma, the duration of temperature elevation over 101 F. by rectum and the duration of a spinal fluid cell count over 30 cells per cubic millimeter from the beginning of treatment. For these comparisons only the patients receiving sulfadiazine have been studied.

The distribution of patients by age is shown in table 1. Sixteen (13.6 per cent) of the patients were under 10 years of age, 66 (55.9 per cent) from 10 to 39 and 36 (30.5 per cent) were 40 years or over. No one under 10 years died, whereas 4 (6.1 per cent) of the patients in the intermediate age group (10-39 years) and 8 (22.2 per cent) of the patients over 39 years succumbed. The difference between the youngest group and the intermediate group is not statistically significant but the death rate in the oldest group is significantly greater than the rate in either of the other two groups as well as these two groups combined. It is also of note that the average duration of coma, fever and pleocytosis is progressively longer in each group and significantly so in the oldest group.

The presence of coma on admission shows a high correlation with the outcome. Among the 44 patients admitted in coma 12 (27.3 per cent) died, whereas not 1 of the 74 patients not in coma on admission died. This is highly significant when tested statistically. The average duration of fever for patients who recovered after being admitted in coma was 4.4 days and for those not in coma was 2.6 days. Moreover, the average duration of lymphocytosis was 26.1 and 18.1 days for patients with and without coma respectively. Both of these differences are of definite statistical significance. On the first day of coma 2 (8.3 per cent) died, whereas of 20 patients admitted with coma of over 1 day's duration 10 (50 per cent) died. In addition, the average duration of illness before the onset of coma of the patients who died was 2 days, which is significantly greater than the average of 1.2 days for the patients who survived after being admitted in coma.

The number of organisms in the spinal fluid has been estimated from smears made in a uniform manner. "Many" organisms were reported when at least one organism was present in practically every field and several organisms were seen in most fields. "Few" organisms were said to be in a smear when approximately one half of the fields contained no organisms and relatively few organisms were present in any individual field. "Rare" organisms were said to be present when they could be demonstrated only after considerable search. When "many" organisms were present 9 patients among 42 (21.4 per cent) died, which is a significantly higher rate than for the patients with "few" organisms, among whom the rate was 5.2 per cent (3 deaths among 58 patients), and also higher than the group of 14 patients with "rare" or "no" organisms, among whom there were no deaths. The averages for the duration of coma, fever and elevated cell count again show a progressive increase the greater the number of organisms.

For the past year we have been doing immediate quantitative dextrose determinations in the spinal fluid. Forty of these patients had dextrose below 10 mg. per hundred cubic centimeters and 6 (15 per cent) died. One (3 per cent) patient among 35 with dextrose between 10 and 49.9 mg. per hundred cubic centimeters died, and 1 (14.3 per cent) out of 7 with dextrose over 49 mg. per hundred cubic centimeters died. Even though suggestive, these figures are not significant. The criteria of rapidity of recovery showed a slight but not significant trend in that the patients with higher dextrose levels responded more rapidly. Dextrose determinations were made on spinal fluids obtained on the second day. The results have been divided into three groups: first, those which decreased or did not increase, second, those which increased but not to 50 mg. per hundred cubic centimeters and, third, those which returned to 50 mg. per hundred cubic centimeters and above.

In the first group 1 out of 4 (25 per cent) died. In the second group 3 (9.7 per cent) among 31 died. In the third group 1 (2.9 per cent) of 34 died. None of these differences are statistically significant.

Other factors which were studied but showed no significant relationship to recovery were sex, race, duration of illness before treatment was begun, presence of

TABLE 1.—*Factors Influencing Prognosis of Patients with Meningococcic Meningitis Treated with Sulfadiazine and Sulfamerazine*

Factor	Group	Number of Patients	Died		Speed of Recovery *		
			Number	Per Cent	Average Duration of Coma	Average Duration of Fever †	Average Duration of Pleocytosis
All cases		118	12	10.1	0.48	2.7	20.6
Age	Less than 10	16	0	0	0.10	1.5	18.6
	10 to 39	66	4	6.1	0.67	2.6	21.9
	40 and over	36	8	22.2	0.89	4.4	22.1
Presence of coma on admission	Yes	44	12	27.3	....	2.6	26.1
	No	74	0	0.0	....	4.4	18.1
Number of organisms in initial spinal fluid	Many	42	9	21.4	0.74	3.4	23.2
	Few	58	3	5.2	0.27	3.1	20.5
	Rare or none	14	0	0.0	0.20	2.0	17.9
	Not recorded	4	0	0.0			
Initial spinal fluid dextrose	Less than 10 mg. per 100 cc.	40	6	15	0.46	3.5	25.7
	10 to 49.9 mg.	35	1	2.9	0.39	3.4	19.2
	50 mg. per 100 cc. and over	7	1	14.3	0.10	1.8	14.0
	Not done	36	4	11.1			
Second day spinal fluid dextrose	No change or decreased	4	1	25.5	2.6	6.4	38.6
	Increased but not normal	31	3	9.7	0.74	4.3	33.3
	Increased to normal	34	1	2.9	0.17	2.2	18.0
	Died before second day	3	3	10.0			
	Not done	48	4	8.3			

* Includes only patients treated with sulfadiazine. † Temperatures permanently below 101 F. by rectum.

neurologic complications on admission, extent of rash, height of initial spinal fluid cell count, group of organisms and the presence of positive blood cultures on admission. Of these, the presence of neurologic complications on admission and the height of the initial spinal fluid cell count show a trend that might become significant when more cases are collected. These trends are that the presence of neurologic complications or of cell counts over 10,000 per cubic millimeter indicates a slower recovery.

Among the patients who recovered, the most frequent complications related to the infection were nerve palsies. These occurred in 21 patients. The majority of them were present on admission or when they could be identified as a comatose patient regained consciousness. They involved both sensory and motor nerves. The only sensory change noted was deafness, which was present in some degree in 8 patients. The motor nerves involved were the cranial third (oculomotor), fourth (trochlear), sixth (abducens), seventh (facial), eleventh (spinal accessory) and twelfth (hypoglossal), which were involved in 14 patients. In 1 boy there was a temporary spinal nerve palsy resulting in a transitory foot drop. More than one nerve was frequently involved, the greatest number in any 1 patient being six. The follow-up on the patients with nerve palsies has been too short for an evaluation of the eventual outcome. However, there has been no appreciable recovery to date in 6 of 8 patients who become deaf, whereas there has been some recovery in 12 of 15 patients with motor nerve involvement.

The other complications that we have encountered include 3 patients who had arthritis, 3 with tenosynovitis and 1 with conjunctivitis from which a meningococcus was cultured. All of these complications were of short duration.

TABLE 2.—*Severity of Illness and Results of Treatment of Meningococcic Meningitis Treated with Sulfadiazine and Sulfamerazine*

Treatment	Number of Patients	Severity of Illness: Admitted in Coma		Severity of Illness: Dextrose Less Than 10 Mg. per 100 Cc.		Severity of Illness: Many Cocci in Initial Spinal Fluid		Results of Treatment: Died		Results of Treatment: Recovered: Average Duration of Coma	Average Duration of Fever *	Average Duration of Pleocytosis	Specific Serum Used
		Number	Per Cent	Number	Per Cent	Number	Per Cent	Number	Per Cent				
Sulfadiazine in series....	22	7	31.7	13	59.2	7	31.7	2	9.1	0.66	3.0	28.0	1
Sulfamerazine in series..	22	6	27.3	12	54.5	5	22.7	2	9.1	0.28	2.9	22.9	3
Sulfadiazine, all cases...	96	38	39.6	28	47.6†	37	39.4‡	10	10.4	0.48	2.7	20.6	8
Total of lines 2 and 3....	118	44	37.3	40	48.7§	42	36.8¶	12	10.2	0.44	2.8	21.0	11

* Temperatures permanently below 101 F. by rectum. † Determined in only 60 patients. § Determined in only 82 patients. ‡ Based on 94 patients. ¶ Based on 114 patients.

TREATMENT

As seen in the third line of table 2, the mainstay of treatment in 96 cases was sulfadiazine. There were ten (10.4 per cent) deaths in this group. One half of these deaths occurred within the first twenty-four hours after admission. Eight of these patients received serum in addition to sulfadiazine. Twenty-two cases have been treated with sulfamerazine. There were two deaths (9.1 per cent) in this group, neither within twenty-four hours. In 3 of these cases serum was administered in addition to chemotherapy.

The response to therapy in the sulfadiazine cases in which survival occurred has varied from dramatic to satisfactory. The time taken for the patient to become rational and the temperature to become normal has been spread over a wide range, the extremes being 0.25 to 6.75 and 0.0 to 12.0 days and the averages 0.48 and 2.7 days respectively.

The most significant complications of sulfadiazine therapy as well as the most common have been urinary in nature. The criteria which we recognize as diagnostic of urinary lithiasis are renal colic, gross hematuria and pronounced unexplained oliguria or anuria with or without azotemia or any combination of these. There have been 10 cases presenting one or more of these findings. In 6 of these cases symptoms developed at a time at which the drug could be discontinued safely. In all 6 cases an uneventful subsidence of symptoms occurred when this was done and fluids were forced. In cases in which further treatment of the infection was required the sulfonamide dosage was maintained, decreased or temporarily interrupted depending on the blood sulfadiazine level. Fluids were forced and attempts at alkalization were made with prompt and satisfactory recovery from renal symptoms. In only 1 case was cystoscopy needed. This was done on the third day of therapy and the drug was reinstituted in low dosage after a twenty-four hour interval.

Other toxicities from sulfadiazine have included 3 instances of rash with fever, 2 instances of fever alone and 1 instance of rash and conjunctivitis. One patient developed a transient leukopenia.

In addition to the foregoing patients, since March 1943 an attempt has been made to evaluate sulfamerazine by giving alternate patients this drug and sulfadiazine. To date this study is unfinished but, as seen in table 2, 22 cases have been treated with each drug with two (9.1 per cent) deaths in each series. The age distribution was approximately the same in the two groups. The severity of cases as measured by presence of coma, dextrose content of the fluid on admission and the number of organisms in the initial smear showed that those patients who received sulfadiazine were slightly more ill. The somewhat more rapid response in patients who survived after receiving sulfamerazine may be correlated with their being less seriously ill. Only 1 person in the sulfadiazine group received serum. Three sulfamerazine treated patients have also received serum.

Three sulfamerazine treated patients had kidney complications as defined. One required cystoscopy. The others responded favorably to conservative treatment. Two instances of rash and fever, 2 examples of fever alone and 1 instance of leukopenia have occurred with sulfamerazine.

SERUM

As shown in table 2, 11 patients received serum. The only patient in the entire series who received serum intraspinally did so in another hospital immediately after the diagnosis. One other patient also received serum before admission. The course of these 2 patients was not different from the course of those who received no

serum. One patient who was in diabetic acidosis was given serum as soon as the initial dose of sodium sulfadiazine was completed. However, the patient died within eight hours. Eight other patients received serum after having failed to respond to sulfonamide therapy in the first twenty-four to forty-eight hours. Four of these continued to fail and died. Four of these patients survived. In 2 it was felt that the recovery was definitely related to the administration of the serum in that a prompt improvement followed. In the other patients who recovered, the actual value of the part played by the serum in influencing the outcome is questionable. Four of the 6 surviving patients developed mild serum sickness.

Of the 3 cases of meningococcemia without evidence of meningitis, 1 presented an acute onset of petechial rash and high fever and the other 2 showed a maculopapular rash, joint pains and fever. The first patient was treated with sulfadiazine with rapid subsidence of symptoms and no complication. The other 2 patients had recovered spontaneously by the time the diagnosis was established. They were observed for a prolonged period and were discharged in good condition.

Table 3 shows the effect of time of onset of the diseases as the epidemic progressed on the incidence, severity and recovery. From Jan. 1, 1942 to June 30, 1942 there were 28 patients, from July 1, 1942 to Dec. 31, 1942 there were 22 patients and from Jan. 1, 1943 to May 31, 1943 there were 67 patients.

In the first time interval there were three (10.7 per cent) deaths, in the second interval three (13.6 per cent) deaths and in the third period six (8.5 per cent) deaths. It is seen, therefore, that no significant increase or decrease in mortality has occurred. On the other hand, the average duration of coma after treatment and of average time taken for temperature and cell count to return to the standards used have shown a prolongation in the more recent cases. The average duration of coma for the last two periods are both significantly greater than that for the initial interval, but the difference between these two compared with each other is not. The same statistical relationship holds for the average times for the temperature to return below 101 F. and the cell count to return below 30 cells per cubic millimeter. There has also been an increase in the percentage of patients admitted in coma. In the first six months 8 (28.6 per cent) patients were admitted in coma. In the next six months there were 10 (43.4 per cent) patients and in the last five months 31 (46.4 per cent).

COMMENT

We have reviewed our experience with two drugs, sulfadiazine and sulfamerazine, in the treatment of meningococcic meningitis and analyzed the clinical and laboratory factors which bore a relationship to the outcome.

Our experience with both sulfonamides to the present time has been favorable. The over-all death rate of twelve (10.2 per cent) deaths among 118 patients compares satisfactorily with those in the literature for sulfonamide therapy.[6]

The incidence of neurologic complications has not been high. Only a few have not cleared up, and the majority of these are nerve deafness. It is too early at this time to tell how many of these palsies will persist permanently. The incidence of toxicity, especially renal, but also rash and fever with or without conjunctivitis, is greater than generally reported for sulfadiazine. Four and two tenths per cent of the sulfadiazine treated patients had fever, rash and conjunctivitis. Ten and four-tenths per cent of patients developed kidney complications. The large doses used as well as the dehydrated state of many of these patients on admission undoubtedly accounted for this high incidence of complications. Certain things must always be done to guard against this danger. The most essential is to secure an adequate fluid intake. At least 3,000 cc. per day should be given. Excessively high doses of the drug should not be used unless necessary, and if the patient is showing satisfactory clinical progress in spite of a low blood sulfonamide level the dose should not be increased. Although we have attempted to keep the p_H of the urine at or above 7.5 in only a few cases, our results have been similar to those obtained by others and have convinced us that this should be done whenever large doses of the sulfonamides are being given.

It is impossible for us to reach any conclusions about serum therapy as an adjunct to sulfonamides, since we have treated too few cases. Occasional patients, however, do show definite benefit from the administration of serum and we feel that it should be available at all times in case the response to sulfonamides is not satisfactory.

TABLE 3.—*Relationship of the Date of Onset to Severity of Illness and Prognosis*

Date of Onset	Number of Patients	Admitted in Coma		Died		Average Duration of Coma *	Average Duration of Fever †	Average Duration of Pleocytosis
		Number	Per Cent	Number	Per Cent			
Jan. 1, 1942 to June 30, 1942.....	28	3	10.7	8	28.6	0.24	1.67	14.7
July 1, 1942 to Dec. 31, 1942.....	22	3	13.6	10	43.4	0.75	3.05	20.4
Jan. 1, 1943 to May 31, 1943.....	67	6	8.5	31	46.4	0.86	3.44	25.3

* Includes only patients who recovered after treatment with sulfadiazine.
† Temperatures permanently below 101 F. by rectum.

Several clinical factors have been found to be significant in prognosis following treatment with sulfadiazine.

Age is shown to be a most significant factor in mortality and in rate of recovery among surviving patients. Prior to the use of sulfonamides the prognosis of infants and elderly patients with meningococcic meningitis was extremely grave. Even with sulfonamide therapy results in these groups have been reported as still carrying higher death rates.[7] Although we have had relatively few infants in this series, the response in the few we have had has been highly satisfactory and our group under 10 years of age is the most favorable one. These results are in keeping with those reported by Hodes.[8] From our figures it would seem that by far the most unfavorable group to treat is that including patients of 40 years and over.

As stated, no significant differences or definite trends could be brought out relating recovery to duration of illness before therapy. This is almost certainly caused by the pleomorphism of the disease and should not encourage delay in diagnosis and treatment. In any individual case we feel sure that time is an important item. We have data that relate duration in the indi-

6. The references given in footnotes, 1, 7 and 10.

7. Becson, P. B., and Westerman, Ethel: Cerebrospinal Fever: Analysis of 3,575 Case Reports with Special Reference to Sulfonamide Therapy, Brit. M. J. **1**: 497 (April 24) 1943.

8. Hodes, H. L., and Strong, P. S.: Treatment of Meningococcic Meningitis with Sulfonamides, J. A. M. A. **119**: 691 (June 27) 1942.

vidual case to outcome. Coma has been shown to be definitely detrimental, and any case which is delayed until coma is established certainly has been delayed too long. Furthermore, we have shown that the duration of coma before treatment is started as well as the duration of the illness before coma occurred are both significant in the outcome of the case. We have had several patients treatment of whom has been delayed, who have slowly gone into coma and been in coma for as long as two days before treatment was begun. These cases, we feel sure, would have been saved by earlier diagnosis and treatment. We feel, therefore, that early diagnosis and treatment are most essential.

Another laboratory manifestation which was found to be of significance in terms of mortality and duration of illness was the number of organisms in the spinal fluid. Apparently one can generalize and say that, the more organisms present, the more severe the illness is likely to be.

Prognostic value of spinal fluid dextrose has been emphasized recently by Rundlett, Gnassi and Price.[9] They feel that a rising spinal fluid dextrose is of utmost significance. We have evidence that, in general, relatively high initial spinal fluid dextrose or rising spinal fluid dextrose is a good prognostic sign. However, in the individual case we have found it not completely reliable. In 4 of our patients who died there was a higher spinal fluid dextrose on the second day of illness than on admission. In 1 of these it was over 70 mg. per hundred cubic centimeters. The duration of illness also did not follow spinal fluid dextrose levels more closely than the several other factors studied.

The time of onset in the epidemic was found to be important in speed of recovery but not in mortality. In considering this factor, all the morbidity measurements show a progressive increase in severity of the disease as the epidemic has progressed to the present time, and most of these trends are statistically significant. We feel safe in stating that there has been a definite increase in the severity of the illness in these cases although it has not been reflected in the mortality rate.

For some time it has been apparent that sulfonamides are effective in the treatment of meningococcic meningitis. However, it is well known that this disease is an extremely variable one in its severity, mortality rates varying from 20 to 90 per cent.[10] It is very difficult, therefore, to evaluate a new therapy without accurately controlled experiments. On the other hand, increasing severity and mortality has been the rule in epidemic times until the peak is reached, and if an agent is effective throughout an epidemic its therapeutic value can be accepted. In our experience the mortality in meningitis treated with sulfadiazine has been both low and stable in a time of increased incidence when the virulence of the disease was increasing. We feel that this gives definite proof of the value of this drug in this disease.

We have begun to evaluate the efficacy of treatment with sulfamerazine as compared with sulfadiazine. Up to the present time the mortality rate is exactly the same in the two groups. The duration of illness and complications in relation to the virulence of the infection have been the same with the two drugs. Sulfamerazine seems to be as effective as sulfadiazine. In our hands it has been slightly more toxic, but the difference is not great.

9. Rundlett, Emilie; Gnassi, A. M., and Price, Preston: Meningococcic Meningitis, J. A. M. A. **119**: 695 (June 27) 1942.
10. Dingle, J. H., and Finland, Maxwell: Diagnosis, Treatment and Prevention of Meningococcic Meningitis, War. Med. **2**: 1 (Jan.) 1942.

SUMMARY

1. We have given sulfadiazine to 96 patients who had meningococcic meningitis, of whom 10 died, and sulfamerazine to 22 patients, of whom 2 died.

2. The presence of coma on admission and the age of the patient were the two most important factors in prognosis. One fourth of all patients admitted in coma died. If coma had been present longer than one day, one half of the patients died. No patients not in coma on admission died. Almost one fourth of patients over 40 years of age died.

3. The presence of numerous organisms or of a very low dextrose level in the initial spinal fluid are other unfavorable prognostic signs.

4. The incidence and severity of the disease treated by us has increased as expected in epidemic times, but the mortality rate has been kept constant.

5. Sulfadiazine is an effective agent in the treatment of meningococcic meningitis.

6. Sulfamerazine is apparently as good a therapeutic agent as sulfadiazine.

TREATMENT OF EPIDEMIC NEONATAL DIARRHEA WITH SUCCINYL-SULFATHIAZOLE

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Outbreaks of epidemic diarrhea of newborn infants occurred in the fall of 1942 in Cleveland, Carlisle, Pa., Detroit, Toledo, Ohio, Dayton, Ohio, and Indianapolis.[1] The disease is now appearing again in various parts of the Midwest. The disease is not new. It has occurred many times in the past in Europe as well as in this country.[2] Infants afflicted are usually less than 1 month of age. Those weighing over 7 pounds (3.2 Kg.) are victims as well as smaller and premature infants. The latter suffer the greatest death rate. The onset of the disease may be sudden or insidious. In the former case the baby begins to pass frequent, watery, greenish yellow stools, vomits and has fever. It may be drowsy or irritable. The weight loss may be alarming, and dehydration within a few hours may be severe. Fluid replacement, blood transfusions, changes of feeding formulas or the addition of pectin agar to the formulas have no satisfactory effect on the outcome of the disease. The mortality rate is usually near 50 per cent.[3]

A milder type of the disease has been described.[2] In this the stools are less frequent, the vomiting is not severe, loss of weight is slight or absent, and dehydration and fever may not be present. The recovery usually occurs in a week or ten days.

During the past several months we have observed diarrheal, neonatal deaths the cause for which we could not ascribe to parenteral infection, improper feeding or specific infection of the gastrointestinal tract, such as the colon-typhoid group of organisms. In our hospital the strictest of preventive medicine is being employed. Throat and stool cultures as well as complete physical examination of all nursery employees reveal no positive

From the pediatric service of Dr. Louis H. Segar.
1. Medical News (Ohio), J. A. M. A. **120**: 853 (Nov. 14) 1942.
2. Ormiston, G.: Epidemic Neonatal Diarrhea in Maternity Hospitals: Clinical Aspect, Lancet **2**: 588-590 (Nov. 15) 1941.
3. Holt, L. Emmett, Jr., and McIntosh, R.: Diseases of Infancy and Childhood, ed. 11, New York, D. Appleton-Century Company, Inc., 1940.

factors. We have not found a causative agent for the disease. However, we do report good results in a small series of cases using a treatment regimen hubbed about succinylsulfathiazole.

CLINICAL PICTURE OF EPIDEMIC DIARRHEA OF THE NEWBORN

The onset of the disease may be sudden or insidious, most of ours being sudden and unmistakably serious from the beginning. The infants rapidly lose weight and become worse as diarrhea and vomiting persist. Dehydration is severe and the infant appears very toxic. Stools number from four to five to fifteen or more in twenty-four hours. They are liquid and usually greenish yellow, although other colors may be present. The temperature is usually near normal but may be elevated 2 or 3 degrees. Repeated stool cultures are negative for pathogenic organisms. In our series there was a single exception, in which case a culture of hemolytic streptococci was obtained. The fatal cases are usually terminated within ten days or two weeks, often the cause of death being a complicating pneumonia.

The milder type of the disease, usually insidious in onset, has been observed by us. The clinical picture is one of barely discernible constitutional symptoms. The infant gradually begins to have more frequent stools, soft in character and usually greenish yellow. Vomiting occurs infrequently. Dehydration and fever are not usually present. Weight remains stationary or there may be a slight loss. Usually after a week or ten days symptoms gradually abate and the infant progresses satisfactorily. There are gradations in severity of the disease and we have observed cases which could be classed with neither of the foregoing.

Succinylsulfathiazole, a comparatively new sulfonamide commercially known as "Sulfasuxidine,"[4] has been used chiefly in the preparation of patients for surgery of the large bowel[5] and for the treatment of bacillary dysentery.[6] We have found no reference in the literature concerning its use in epidemics of neonatal diarrhea.

The original work on this drug by Firor, Poth, Knotts and others resulted from work designed to develop an agent that had powerful antibacterial activity in the bowel.[7] Succinylsulfathiazole is ideal for this purpose. The workers mentioned have shown that the administration of the compound to animals alters the intestinal flora to such an extent that the number of Escherichia coli per gram of wet stool is reduced from a normal of ten million to one hundred. They also report that only 5 per cent of the ingested drug is eliminated by the kidneys and that little if any toxicity results from its administration. In fact, no toxic reactions of importance have occurred.[8] The stools are softened and rendered odorless.

The action of the drug is purely local. Poth reports that succinylsulfathiazole is acted on by intestinal bacteria to cause hydrolysis and a yield of sulfathiazole locally in the bowel.

The suggested routine dosage consists in the oral administration of 0.25 Gm. per kilogram as an initial dose, this being followed by 0.25 Gm. per kilogram in twenty-four hours. In the preparation of patients for surgery of the bowel, Gatch advises the administration of 0.5 Gm. per kilogram as an initial dose followed by 0.5 Gm. per kilogram daily, the dosage being divided into six equal daily doses for eight days.[9]

Because of its safety and proved value in reducing the number of coliform organisms, we have incorporated succinylsulfathiazole into the treatment of infectious neonatal diarrhea. We offer no explanation for the success of its employment, since no specific cause for the disease has been found.

OUTLINE OF TREATMENT

Treatment consists in (1) succinylsulfathiazole by mouth, (2) opiates by mouth, (3) vitamin K, (4) plasma or whole blood transfusions, (5) parenteral fluids and (6) protein milk formulas.

The newborn infants placed on our treatment routine cannot be classed as a selected group. In the early stages of the epidemic the infants were subject to varying modes of therapy, which in most cases were supportive in character. The extreme fluid and electrolyte loss was combated with isotonic solution of sodium chloride, distilled water and dextrose, plasma or whole blood. Superficial veins were exposed for venoclysis and frequently as many as five or six of these procedures were required, often with failure to reduce dehydration. Subcutaneous injections of fluids were only a moderate aid. Oral offerings were pushed to tolerance. Some physicians gave sodium sulfathiazole with no apparent relief of symptoms. Whole blood seemed to provide a short lived stimulus in a few cases and was interchanged with plasma and fluids.

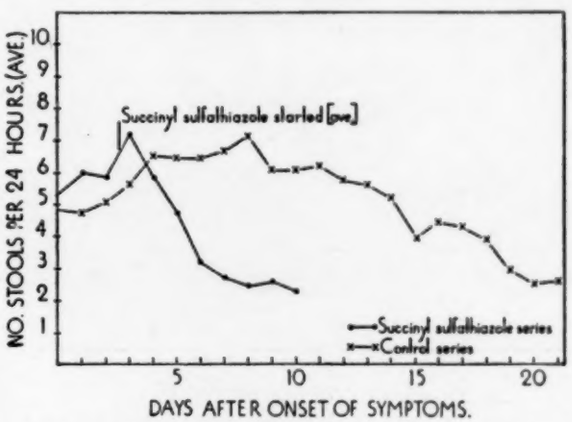
NO. STOOLS PER 24 HOURS (AVE.)
Succinyl sulfathiazole started [gve.]
o—Succinyl sulfathiazole series
x—Control series
DAYS AFTER ONSET OF SYMPTOMS.

Chart 1.—Note sharp drop in number of stools in twenty-four hours of infants treated with succinylsulfathiazole.

Succinylsulfathiazole was first tried on 2 infants who were in advanced states of dehydration and were well below their birth weights. One of these was premature. The judicious administration of camphorated tincture of opium was concurrently instituted in an attempt to reduce diarrheal loss of the drug as well as of fluid. Since the number of stools was decreased soon after treatment was begun (chart 1) fewer injections of parenteral fluids were necessary. Diet was maintained on a protein milk formula for a relatively lengthy time. The response was gratifying

4. Succinylsulfathiazole is registered under the proprietary name of "Sulfasuxidine" by Sharp and Dohme, Philadelphia.

5. Poth, E. J.: Succinylsulfathiazole: Adjuvant in Surgery of the Large Bowel, J. A. M. A. **120**: 265-269 (Sept. 26) 1942.

6. Smyth, C. J.; Finkelstein, M. B.; Gould, S. E.; Koppa, T. M., and Leeder, F. S.: Acute Bacillary Dysentery: Treatment with Sulfaguanidine and Succinylsulfathiazole, J. A. M. A. **121**: 1325-1330 (April 24) 1943.

7. Poth, E. J., and Knotts, F. L.: Succinylsulfathiazole, a New Bacteriostatic Agent Locally Active in the Gastrointestinal Tract, Proc. Soc. Exper. Biol. & Med. **48**: 129-130 (Oct.) 1941. Poth, E. J.; Knotts, F. L.; Lee, J. T., and Inui, F.: Bacteriostatic Properties of Sulfanilamide and Some of Its Derivatives: I. Succinylsulfathiazole, a New Chemotherapeutic Agent Locally Active in the Gastrointestinal Tract, Arch. Surg. **44**: 187-207 (Feb.) 1942. Poth, E. J., and Knotts, F. L.: Clinical Use of Succinylsulfathiazole, ibid. **44**: 208-222 (Feb.) 1942.

8. Welch, A. D.; Mattis, P. A., and Latven, A. R.: A Toxicological Study of Succinylsulfathiazole, J. Pharmacol. & Exper. Therap. **75**: 231-246 (July) 1942.

9. Gatch, W. D.: Personal communication to the authors.

in both instances. Permission was obtained for further use of the drug. A routine of treatment was established and 9 infants subsequently affected were placed on a regular schedule. The most successful routine appeared to be one in which the opiate administration was adjusted to allow not more than three or four stools in twenty-four hours. Succinylsulfathiazole was given in somewhat larger amounts than generally recommended in the literature. Our standard was set at an initial dose of 2 grains per pound of body weight followed by one-sixth the initial dose every four hours. These are conveniently given with the regular feeding schedule and are apparently taken well by the infant. Gavage feeding was necessary in only 1 instance, although isolated instances of vomiting did occur.

It is important to administer vitamin K to infants treated with succinylsulfathiazole, since a reduction in the number of coliform organisms inhibits the absorption of the vitamin and hence promotes bleeding tendencies.

A large weight gain was not expected while the infants were on protein milk formulas. In fact, weight loss may continue for a short time following the institution of treatment and the increase may appear to be

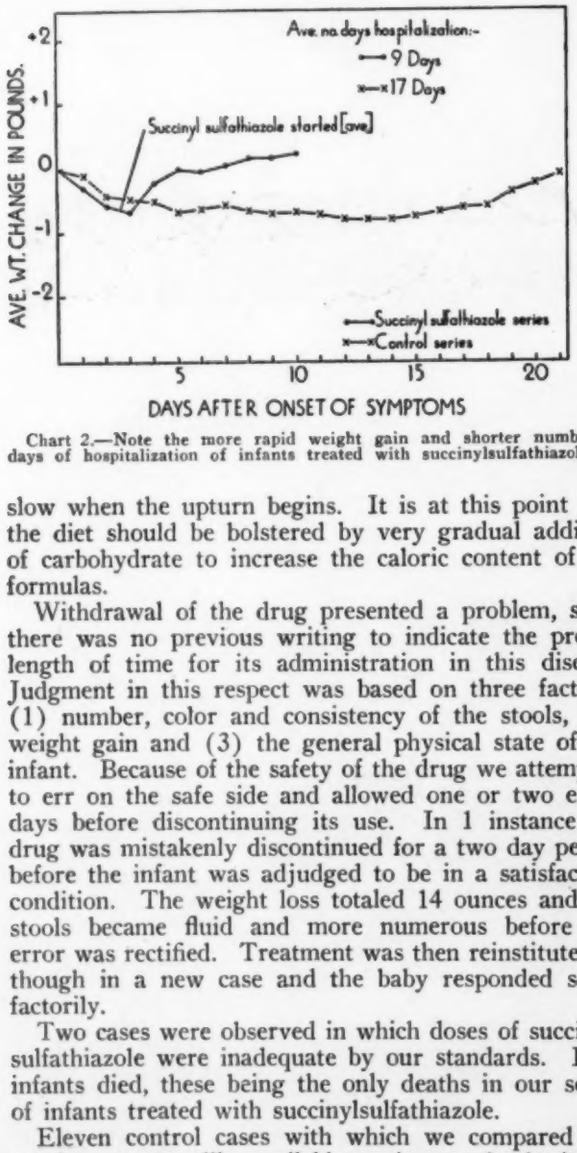

Chart 2.—Note the more rapid weight gain and shorter number of days of hospitalization of infants treated with succinylsulfathiazole.

slow when the upturn begins. It is at this point that the diet should be bolstered by very gradual addition of carbohydrate to increase the caloric content of the formulas.

Withdrawal of the drug presented a problem, since there was no previous writing to indicate the proper length of time for its administration in this disease. Judgment in this respect was based on three factors: (1) number, color and consistency of the stools, (2) weight gain and (3) the general physical state of the infant. Because of the safety of the drug we attempted to err on the safe side and allowed one or two extra days before discontinuing its use. In 1 instance the drug was mistakenly discontinued for a two day period before the infant was adjudged to be in a satisfactory condition. The weight loss totaled 14 ounces and the stools became fluid and more numerous before the error was rectified. Treatment was then reinstituted as though in a new case and the baby responded satisfactorily.

Two cases were observed in which doses of succinylsulfathiazole were inadequate by our standards. Both infants died, these being the only deaths in our series of infants treated with succinylsulfathiazole.

Eleven control cases with which we compared our results were readily available, owing to the hesitancy of many practitioners to institute treatment with succinylsulfathiazole. Selection of cases was determined only by permission of the attending physician. None were selected on a basis of severity of the disease.

SUMMARY

1. Epidemic neonatal diarrhea is confined chiefly to infants under 1 month of age. The onset may be sudden or insidious. The amount of dehydration, weight loss and toxicity depend on the severity of the disease. Stools are liquid and usually greenish yellow. Vomiting occurs in some cases. Fever is present in proportion to the extent of dehydration.

2. A brief review of the literature on succinylsulfathiazole reveals its proved value as a powerful agent in altering the intestinal flora. Its toxicity is minimal.

3. Of 22 cases of neonatal diarrhea, 11 were treated with succinylsulfathiazole. In the latter group there were only two fatalities, both of which we believe were due to inadequate dosage of the drug.

In the control series there were four deaths. The average number of days of hospitalization for those who recovered was almost twice that of the treated infants.

The weight gain for eight days of infants treated with succinylsulfathiazole was not matched in seventeen days by the untreated infants (chart 2).

There was a rapid reduction in the number of stools in twenty-four hours in those infants treated with succinylsulfathiazole in contrast to a very gradual reduction in the untreated ones (chart 1).

1434 North Delaware Street.

Determination of Ovulation.—The presence or absence of ovulation is determined from the microscopic appearance of the endometrium in the premenstrual phase. The tissue is removed with the biopsy curet in the clinic at any time from the seventh day preceding the onset of menstruation to four hours after the establishment of the flow. . . . Ovulation is now assumed to occur in normal ovulating adults on or about the thirteenth to the fifteenth day from the commencement of the cycle, and the changes seen in the normal endometrium from the assumed date of ovulation are quite striking. On the fifteenth day vacuolization of the cytoplasm occurs in the epithelial cells, most prominently in those lining the superficial glands, and the nuclei appear to migrate toward the surface of the cells, leaving a clear zone at the base. This effect is maximal on the seventeenth day, when the nuclei are normally lying in a row, each one toward the center of its own cell. The next nuclear move is toward the base, where they return about the nineteenth day. Secretion begins about the seventeenth day and by the twenty-first is well advanced. As the nuclei migrate toward the base, clearing of the superficial cytoplasm occurs, the cells swell and finally the superficial margins break down and active secretion occurs into the lumina of the glands. These glands dilate, the swollen cells give them a serrated or saw-toothed appearance in cross section, and they become tortuous. The stromal changes are just as distinct. On or about the eighteenth day small patches of edema appear in the more superficial areas, and the stromal nuclei, which hitherto had been closely packed and surrounded by very little cytoplasm, gradually become separated, until by the twenty-first day each is discrete from its fellow. The next change is an increase in the cytoplasm; this first occurs in the cells surrounding the small arterioles on the twenty-third day, and by the twenty-sixth day the edema is replaced by a sheet of stromal cells with large, pale nuclei and abundant cytoplasm. Just before menstruation commences the superficial layer becomes almost solid, and there is a striking resemblance of these stromal cells to decidual cells. The glands at this time are sometimes dilated, contain varying amounts of secretion and are lined by cuboidal epithelium.—Mackey, R.: Anovulatory Menstruation, *M. J. Australia*, June 5, 1943.

CARDIAC DYSRHYTHMIA AND SYNCOPE

FROM THERAPEUTIC INHALATION OF CHLORINATED HYDROCARBONS

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NEW HAVEN, CONN.

The current wartime expansion in industry has unavoidably introduced some loss of supervision and control of health hazards by industrial health agencies, and the exposure of workers to noxious agents is becoming a major public health problem. Prominent among the chemicals concerned in industrial toxicology are trichloroethylene and carbon tetrachloride, which, because of their efficiency as lipoid solvents, enjoy wide use particularly as degreasers of tools and machinery. Browning [1] listed twelve other major industrial uses for trichloroethylene and seven for carbon tetrachloride. Because of the high degree of volatility of these agents, the inhalation of their fumes is a common mode of intoxication.

Although trichloroethylene is much less toxic than carbon tetrachloride,[2] Hamilton [3] a decade ago reviewed the reports of 26 deaths among 284 cases of poisoning from trichloroethylene in German industry. A common factor in the fatalities discussed by both Hamilton [3] and Browning [1] was antecedent loss of consciousness. Death was usually considered due to profound narcosis from excessive exposure, to phosgene poisoning from thermal decomposition products of trichloroethylene or to cerebral vascular damage similar to that more commonly observed in carbon monoxide poisoning.

In contrast to the many reported cases of industrial poisoning are the very few that have apparently followed even improper therapeutic use of trichloroethylene, and the administration of this drug by inhalation is generally regarded as safe. Eichert [4] reported 2 instances of toxic psychosis following excessive therapeutic inhalation and referred to only one other existing report. In all 3 instances Eichert commented on the difference in toxic manifestations exhibited by these subjects in contrast with the usual features of industrial intoxication. Several writers have expressed the opinion that the actual cause of industrial poisoning is partly or largely adventitious substances inhaled with the trichloroethylene.

I have recently encountered a remarkable case in which serious toxic manifestations of a character not hitherto described were observed in association with the infrequent therapeutic administration of small doses of medicinal trichloroethylene (and once of carbon tetrachloride) by inhalation. The case seemed noteworthy because of the unique character of the untoward effects induced and because of the new light that the experience may cast on a plausible cause of death not previously considered in acute fatal intoxication from chlorinated hydrocarbons.

From the Department of Internal Medicine, Yale University School of Medicine.

1. Browning, Ethel: Toxicity of Industrial Organic Solvents, report No. 80, Industrial Health Research Board of the Medical Research Council, London, His Majesty's Stationery Office, 1937.

2. Barrett, H. M.; MacLean, D. L., and Cunningham, J. G.: A Comparison of the Toxicity of Carbon Tetrachloride and Trichloroethylene, J. Indust. Hyg. & Toxicol. **20**: 360 (May) 1938.

3. Hamilton, Alice: Industrial Toxicology, New York, Harper & Brothers, 1934.

4. Eichert, Herbert: Trichloroethylene Intoxication, J. A. M. A. **106**: 1652 (May 9) 1936.

REPORT OF CASE

Mrs. E. P. had always enjoyed unusually good health until her sixty-second year, when anorexia, occasional discomfort in the right upper quadrant with mild dyspepsia and periodic vertex headaches with insomnia first appeared. Within eight months she lost 30 pounds (13.6 Kg.) and was admitted to the New Haven Hospital for study.

Examination revealed obvious loss of weight with a current weight of 127 pounds (57.6 Kg.). The admission blood pressure was 155/85. False teeth, palpable kidneys and cystocele and rectocele were the only other abnormalities on physical examination. Gallstones were disclosed by roentgenography. Other laboratory findings, including blood count, urine and stool examinations, Kahn test of the blood, gastric analysis and sigmoidoscopic and roentgenographic examination of the colon were all negative.

Cholecystectomy was performed, following which appetite improved, and 14 pounds (6.4 Kg.) was gained in two months, but some dyspepsia persisted and the vertex headaches increased gradually in severity and soon became daily occurrences. A peculiarity of the headaches was their prompt appearance on arising each morning and their subsidence during the night, but simply lying down during the day had no favorable effect. Optical correction of a refractive error brought no relief. Reexaminations by consulting otorhinolaryngologist and neurologist did not disclose any apparent causes for the distressing headaches.

With the persistence of intractable headache for almost two years the patient became depressed, worried and discouraged. Because the usual variety of analgesic and sedative drugs had

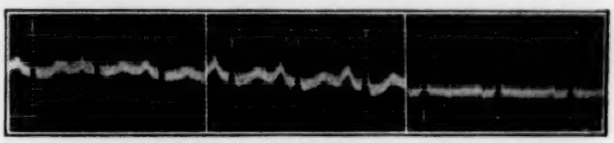

Fig. 1.—Control electrocardiogram preceding inhalation of drug.

afforded no relief for the headaches, the dispensary physician ultimately decided to try trichloroethylene by inhalation.[5]

The administration consisted usually of the contents of 1 ampule (1 cc.) of trichloroethylene dropped on a gauze square and placed in an ordinary drinking glass for inhalation by the patient in a reclining position. The procedure was sometimes repeated once within five or ten minutes.

On the occasion of the first inhalation the patient apparently fell asleep for several minutes, which was not unexpected, for trichloroethylene is known as a general anesthetic. On awakening, the patient declared that the headache was completely gone. Three and again four days later she returned requesting more treatments, because headache had recurred, and again she obtained complete relief lasting a day or longer. On the latter occasions it was observed that the sleep induced so promptly by the inhalation was actually a profound loss of consciousness, for the patient could not be aroused and did not respond to painful stimuli. Moreover, it was noted for the first time that the pulse became rapid and completely irregular during the inhalation, but the blood pressure did not change significantly, color remained good and respiration seemed normal. On her regaining consciousness about one minute after the inhalation the heart action was again entirely regular.

The patient kept returning approximately weekly requesting further inhalational treatments and stating with evident gratification that the intervals of freedom from headache were gradually lengthening to about a week. During repeated inhalations of 1 cc. doses of trichloroethylene on six subsequent occasions, the same loss of consciousness and transient arrhythmia of the

5. Rubinstein, H. S.: Use of Trichloroethylene in the Treatment of Migraine, Arch. Neurol. & Psychiat. **37**: 638 (March) 1937. Geiger, A. J., and Goodman, L. S.: Trichloroethylene in Migraine, J. A. M. A. **108**: 1733 (May 15) 1937.

heart were noted each time and the headache was always promptly relieved.

Because of the patient's remarkable improvement not only in the matter of headache but also in her emotional behavior and general sense of well-being, the possibility was considered that suggestion might be a significant factor in the apparent

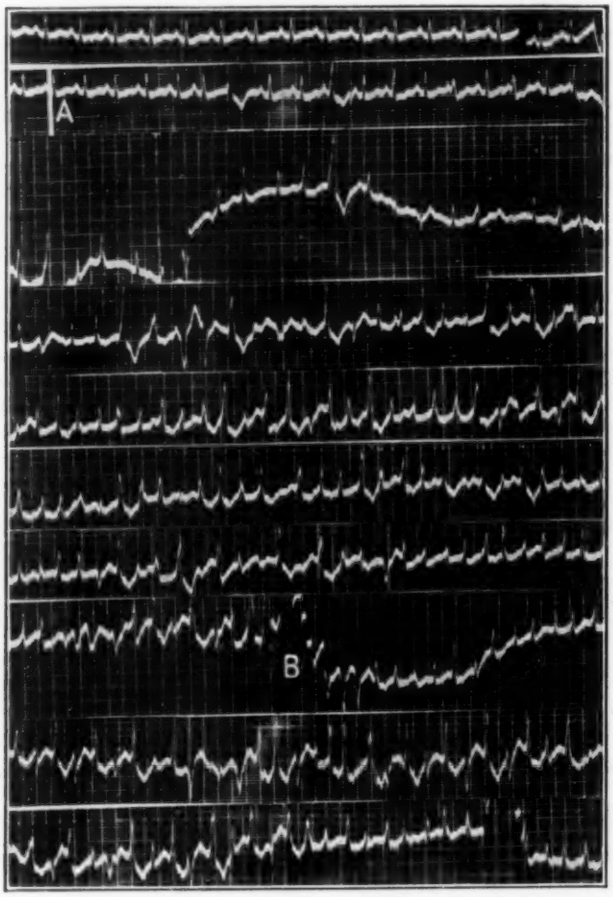

Fig. 2.—Continuous recording of lead 2. Each horizontal strip is of about 8.6 seconds duration. At *A* inhalation was begun; *B* (continued in figure 3), patient lost consciousness.

success of the treatment. To test this, a gauze square moistened with amyl acetate was substituted for the usual trichloroethylene without the patient's knowledge. No effects were observed on consciousness, heart action or headache. On another occasion a few cubic centimeters of carbon tetrachloride were administered again, partly as a control inhalation but also to see whether another chlorinated hydrocarbon would produce the same bizarre reactions that accompanied trichloroethylene. Inhalation of the carbon tetrachloride was again followed within a few seconds by cardiac arrhythmia and profound loss of consciousness precisely as had occurred previously with trichloroethylene. On this occasion a normal control electrocardiogram was obtained just prior to the inhalation (fig. 1), and then lead 2 was recorded continuously throughout the experiment (figs. 2 and 3). The tracing shows the prompt appearance of ventricular ectopic beats, which rapidly increased to multifocal beats of such profusion that they completely dominated the cardiac rhythm for almost a full minute after the administration of the drug had been terminated. Consciousness and normal rhythm reappeared practically simultaneously and, as usual, the headache was completely gone. The protocol for this experiment, which was typical of the previous experience with trichloroethylene, follows:

"Same old headache."

11: 00 a. m.	Control electrocardiogram, three leads, then continuous lead 2. Blood pressure 160/90, reclining. Pulse 90.
11: 01	Amyl acetate inhalation, three minutes. No loss of consciousness, no pulse irregularity. Blood pressure 180/90. Pulse 120.
11: 05	Carbon tetrachloride inhalation begun. Within thirty seconds slight irregularity of pulse noted.
11: 06	Patient has just lost consciousness. Pulse now totally irregular. Blood pressure 184/110. Heart rate about 130. Color good, respirations normal.
11: 07	Inhalation terminated. Color good.
11: 08	Patient awakening. Heart still irregular.
11: 10	Patient fully conscious. Blood pressure 180/110. Pulse 130, ? irregular.
11: 15	"No more headache." Blood pressure 160/90. Pulse 90, regular.

Because the cardiac irregularity, as depicted by the electrocardiogram, seemed of ominous character, no subsequent administrations of chlorinated hydrocarbons to this patient were deemed permissible.

COMMENT

Loss of consciousness from inhalation of fumes of the chlorinated hydrocarbons is well known.[6] It occurred in 117 of the 284 cases of trichloroethylene

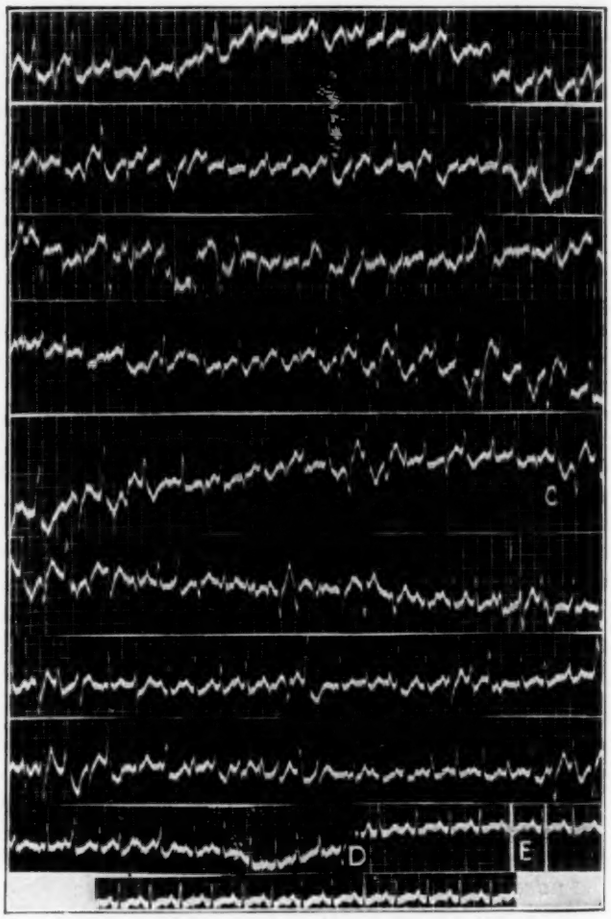

Fig. 3.—Continuation of figure 2. *C*, inhalation terminated; *D*, patient regaining consciousness, and recording was suspended for twenty-five seconds; *E*, patient fully conscious.

intoxication reported by Stüber.[7] Indeed, the drug has been given some trial as a general anesthetic[8] and, because it is less volatile than ether, noninflam-

6. Browning.[1] Hamilton.[3]

7. Stüber, K.: Gesundheitsschädigungen bei der gewerblichen Verwendung des Trichloräthylens und die Möglichkeiten ihrer Verhütung, Arch. f. Gewerbepath. u. Gewerbehyg. **2**: 398 (July 27) 1931.

8. Keller, P.: Chlorylen als Inhalationsanästheticum bei Eingriffen an der Gesichtshaut, Dermat. Wchnschr. **95**: 973 (July 2) 1932. Jackson, D. E., and Herzberg, Mortimer: A Study of Analgesia and Anesthesia, with Special Reference to Such Substances as Trichloroethylene and Vinesthene, Together with Apparatus for Their Administration, Current Researches in Anesth. & Analg. **13**: 198 (Sept.-Oct.) 1934. Striker, C.; Goldblatt, S.; Warm, I. S., and Jackson, D. E.: Clinical Experiences with the Use of Trichloroethylene in the Production of Over 300 Analgesias and Anesthesias, ibid. **14**: 68 (March-April) 1935.

mable and simple to administer, it is being considered as the anesthetic of choice under field conditions in the tropics. Induction of trichloroethylene anesthesia usually takes from four to ten minutes and characteristically includes an obvious excitement stage; recovery is usually rapid and complete within five minutes after the inhalation has been discontinued. However, the loss of consciousness repeatedly exhibited by our patient did not appear typical of the induction stage of anesthesia with this drug. The syncope was remarkable for the rapidity with which it developed, for ten to fifteen inhalations from a single crushed ampule usually led suddenly to unconsciousness without any excitement period whatever, and complete consciousness usually returned abruptly within one to two minutes after the inhalation had been discontinued. It seems unlikely that the concentration of the drug in the blood and central nervous system could have reached ordinary anesthetic levels so quickly and from such a small dose. That the patient's behavior was not merely an emotional reaction was apparent from her unresponsiveness to painful stimuli during the coma. There was no pallor, cyanosis or disturbance of respiration to suggest anoxia, nor was the relatively open method of administration by inhalation from a drinking glass likely to exclude a considerable admixture of atmospheric oxygen. Finally, the loss of consciousness was clearly not the result of greatly diminished cardiac output from disordered action of the heart, because the blood pressure never declined. One appears to be left with idiosyncrasy as an explanation, although Hamilton [3] stated that idiosyncrasy to the drug was unknown.

As to the mechanism by which the arrhythmia was induced, one can only speculate from the limited data, yet when our observations are viewed in the light of important earlier experiments a reasonably confident statement may be ventured. The current opinion is that the cardiovascular system in the intact animal or man is largely unaffected by both trichloroethylene and carbon tetrachloride,[9] and cardiac arrhythmias have not been described. However, irregular action and fatal arrest of the heart from the inhalation of another chlorinated hydrocarbon, chloroform, have long been known. Levy and Lewis [10] and Levy [11] have clearly demonstrated in cats that the immediate cause of death from chloroform is ventricular fibrillation which is invariably preceded by ectopic ventricular beats arising from multiple foci. They concluded from abundant experimental evidence that light chloroform anesthesia sensitizes the heart to factors (chiefly sensory stimulation and epinephrine) that may precipitate ventricular arrhythmias and fibrillation from the local action of the drug on the heart. Hill [12] supplied the next important link in the chain of evidence by showing that 50 per cent of patients develop multiple focus ventricular tachycardia for brief periods during the induction stage or irregular conduct of surgical anesthesia under chloroform. The relation of these observations to the case herein reported is that the electrocardiographic picture of multiple focus ventricular ectopic tachycardia illustrated in figures 2 and 3 is indistinguishable from some of the records published by Hill and by Levy and Lewis as examples of ventricular prefibrillation produced by chloroform. The importance of the arrhythmia is obvious from Levy and Lewis's observation that final ventricular fibrillation is the next natural step in the expected train of events.

It seems undeniable that the irregular ventricular tachycardia which we observed represented an ominous prefibrillation arrhythmia, and as such it constitutes the first clear demonstration of a serious cardiac effect from the inhalation of trichloroethylene and of carbon tetrachloride. How common and real is this hazard? It appears rare and remote if judged by the fact that the irregular tachycardia has never been mentioned in connection with the inhalation of either drug. However, moderate acceleration of the heart rate is a common clinical observation, and one may wonder whether, in the presence of tachycardia, a relatively slight irregularity may not escape clinical detection. Moreover, while fatalities from acute trichloroethylene poisoning are commonly attributed to profound narcosis or ascribed to some other agent or cause, yet sporadic instances of fatality or near fatality which might conceivably have been due to ventricular fibrillation induced by trichloroethylene or carbon tetrachloride are not difficult to find in the medical literature. The following may serve as examples:

Browning [1] writes as follows on page 177 of her monograph: "Two cases of death following exposure to trichloroethylene were also reported to the Home Office in 1934, but it was considered by the Senior Medical Inspector that death could not be ascribed to such exposure since in one the result of the post-mortem examination, including an analysis of the stomach contents, was thought to negative the possibility of acute poisoning by trichloroethylene or phosgene and revealed no obvious cause of death."

Veley [13] referred to the case of a young woman who became unconscious and died while receiving a "dry" hair shampoo with carbon tetrachloride and cited another instance in which under similar circumstances the woman lost consciousness and developed a rapid and irregular pulse but recovered.

Chandler [14] described an alarming experience with a 4 year old patient who lay prone while an adhesive tape dressing was being removed from the back with the aid of a sponge soaked in carbon tetrachloride. He wrote "The patient collapsed suddenly, respirations ceased, and the radial pulse became impalpable. Death appeared imminent. Artificial respiration was instituted. In about five minutes the pulse returned, as did active respiration, at first feebly, and then stronger. In about ten minutes the child was quite normal. The subsequent convalescence has been uneventful."

Could mild nasopharyngeal irritation by these vapors have initiated a trigeminocardiac reflex which, perhaps together with unusual epinephrine release under slight

9. Barsoum, G. S., and Saad, K.: Relative Toxicity of Certain Chlorine Derivatives of the Aliphatic Series, Quart. J. Pharm & Pharmacol. **7**: 205 (April-June) 1934. Browning.[1] Hamilton.[3]

10. Levy, A. G., and Lewis Thomas: Heart Irregularities, Resulting from the Inhalation of Low Percentages of Chloroform Vapor, and Their Relationship to Ventricular Fibrillation, Heart **3**: 99, 1911-1912.

11. Levy, A. G.: The Exciting Causes of Ventricular Fibrillation in Animals Under Chloroform Anesthesia, Heart **4**: 319, 1912-1913.

12. Hill, I. G. W.: Cardiac Irregularities During Chloroform Anesthesia, Lancet **1**: 1139 (May 28) 1932; The Human Heart in Anesthesia: An Electrocardiographic Study, Edinburgh M. J. **39**: 533 (Sept.) 1932.

13. Veley, V. H.: The Recent Fatality at a Hairdressing Establishment from the Use of Carbon Tetrachloride as a Shampoo: The Inquest and Prosecution for Manslaughter, Lancet **2**: 1162, 1909.

14. Chandler, F. A.: The Use of Carbon Tetrachloride in the Removal of Adhesive Tape: Report of a Near Fatal Case, J. A. M. A. **107**: 2121 (Dec. 26) 1936.

excitement, resulted in the production of numerous foci of ventricular hyperexcitability and discharge? Our experiment with amyl acetate, which might be viewed as a control, was negative in this regard; and, while the question probably remains unanswered, it would appear that trichloroethylene and carbon tetrachloride were specifically harmful by virtue of their chemical constitution rather than merely as mild irritants of the nasal mucosa.

If three of the chlorinated hydrocarbons can be incriminated as probable excitants of ventricular fibrillation, one should probably also regard the others of this group with suspicion. In fact, it is not difficult to find suggestive evidence of this effect in the literature on industrial toxicology. Thus, Collier [15] included precordial pain and "attacks of rapid beating of the heart" among the symptoms he had observed in acute industrial intoxication from inhalation of dichloromethane used as a paint remover. Hamilton [3] referred to a case of accidental death in which the victim had gone into a vat that had previously contained rubber dissolved in dichloromethane; the man was later found dead inside the vat. And Carozzi, quoted by Hamilton,[3] remarked that workers in a dry cleaning establishment using mixtures of dichloroethane and trichloroethylene exhibited disturbances of cardiac activity along with other manifestations of intoxication.

In my opinion the inhalation of medicinal trichloroethylene, even in therapeutic doses, is no longer to be regarded as entirely without danger, and self medication by patients should be permitted only under the direction of a physician who has first assured himself that such inhalation does not disturb the patient's heart action. Moreover, the use of trichloroethylene as a surgical anesthetic offers the threat of sudden death during light or irregular anesthesia by a mechanism precisely like that of chloroform. To the familiar hepatic and renal injury from carbon tetrachloride one must now add the possibility of its inducing ventricular fibrillation. Recognition of such hazards calls for even greater vigilance against industrial exposure to these vapors even in moderate concentrations and for brief periods. The indications in industry are for efficient ventilation or for the use of airline masks when ideal ventilation is not attainable.

SUMMARY

Profound loss of consciousness and multiple focus ventricular tachycardia, of an ominous type likely to lead to fatal ventricular fibrillation, developed repeatedly in a patient receiving therapeutic inhalations of medicinal trichloroethylene and also when carbon tetrachloride was experimentally substituted. The demonstrated type of cardiac irregularity probably explains some of the mysterious deaths reported in industrial exposures to vapors of the chlorinated hydrocarbons. Protection from such vapors should be afforded by efficient ventilation.[16]

15. Collier, H. E.: Methylene Dichloride Intoxication in Industry, Lancet **1**: 594 (March 14) 1936.

16. After this manuscript had been prepared, the author encountered a recent publication by R. M. Waters, O. S. Orth and N. A. Gillespie (Anesthesiology **4**: 1 [Jan.] 1943) calling attention to cardiac arrhythmias noted by them in 10 patients and 7 dogs during anesthesia with trichloroethylene. Multiple focal ventricular extrasystoles and ventricular paroxysmal tachycardia were seen several times among 6 patients followed electrocardiographically. These observations confirm the contention that trichloroethylene shares with chloroform the danger of evoking ominous disturbances in the cardiac mechanism.

HEMANGIOMA OF VERTEBRA WITH COMPRESSION OF CORD

REPORT OF A CASE CURED WITH RADIATION FOURTEEN YEARS AGO

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Back pain is a common cause of admission to military hospitals in this country. A possible explanation of an occasional case is compression of the spinal cord by hemangioma of the vertebra. Hemangiomas of the vertebrae have been noted in more than 10 per cent of a large series of routine autopsies, more commonly in older persons and in females (Schmorl, quoted by most of the authors cited). While these hemangiomas rarely result in compression of the cord, when they occur in young males they seem to cause symptoms relatively often. Bailey,[1] in reviewing 26 reported cases with evidence of compression (1929), noted 4 in patients under 20 years of age (Globus and Doshay 13, Trommer 17, Guillain 18, Gerhardt 18), and Kudryashev [2] more recently has reported one in a youth of 19.

In 1942 Ferber and Lampe [3] assembled from the literature 52 cases of hemangioma of the vertebra with compression of the cord and contributed 1 of their own. To this number are added 12 more (Kudryashev,[2] Stern [4] and 10 from the Mayo Clinic [5]), making a total of 65.

The symptoms resulting from compression of the cord by vertebral hemangioma are like those produced by any other type of extradural tumor, though they "probably resemble more the symptoms produced by a metastatic lesion of the spinal cord" in the opinion of Ghormley and Adson.[5] According to these authors, Gold (1927) and Perman (1928) described the x-ray findings characteristic of the condition, although, as shown by Schmorl, a hemangioma may be present without being demonstrable roentgenographically. Bailey and Bucy [6] said that in the pathognomonic roentgenogram may be seen "a reduction of bone density between parallel trabeculae which are increased in density." This appearance results from the independent growth of the angiomatous tissue which destroys certain trabeculae and causes the remaining ones to thicken.

Bailey and Bucy,[6] in reporting the second case successfully treated by surgical measures (and subsequent irradiation), advocated laminectomy followed by irradiation. Kudryashev [2] operated on his patient but did not resort to roentgenotherapy until required to do so by a recurrence of symptoms six months later. Stern's [4] patient, a woman of 73, died following operation. Surgical attack has carried a high mortality ("in virtually every report authors emphasize the difficulty and seriousness of the operation because of excessive bleeding" [3]), and a number of patients surviving operation have been submitted later to x-ray treatment. Ferber

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1. Bailey, Percival: Personal communication to the author, June 7, 1929.

2. Kudryashev, E. I.: Hemangioma of Spine with Symptoms of Compression of Spinal Cord, Nevrop. i. psikhiat. **9**: 94-96, 1940.

3. Ferber, Leon, and Lampe, Isadore: Hemangioma of Vertebra Associated with Compression of the Cord: Response of Radiation Therapy, Arch. Neurol. & Psychiat. **47**: 19-29 (Jan.) 1942.

4. Stern, A.: Ueber einen ungewöhnlichen extramedullären Rückenmarkstumor, Monatschr. f. Psychiat. u. Neurol. **104**: 372-377, 1941.

5. Ghormley, R. K., and Adson, A. W.: Hemangioma of Vertebrae, J. Bone & Joint Surg. **23**: 887-895 (Oct.) 1941.

6. Bailey, Percival, and Bucy, P. C.: Cavernous Hemangioma of the Vertebra, J. A. M. A. **92**: 1748-1751 (May 25) 1929.

and Lampe [3] maintain, therefore, that the diagnosis can be established with sufficient surety to warrant roentgenotherapy as "the primary and sole method of treatment," provided improvement is discernible in a short time. This plan was followed in 12 cases reviewed by them and in their own case. Of these 13, recovery was complete in 10 and almost complete in 1; in the other 2 cases a few months after treatment there was "marked improvement," which may have become complete subsequently. In a fourteenth case (one of Freedman's three), complete paraplegia developed under roentgenography, so laminectomy was performed in three stages; eventually this patient also recovered.

Ghormley and Adson [5] reported 5 cases treated with x-rays only: 1 did not improve, 2 showed great improvement and 2 were well four and six years respectively after irradiation. They advise laminectomy only when paraplegia has developed, and often they follow operation with x-rays. They have operated on 5 patients with paraplegia. One died a few weeks after operation with complete paralysis below the level of the lesion. One, who became able to walk again, died six years later, apparently from a cerebral accident. One recovered clinically without the use of x-rays. Of the 2 who were also irradiated, one got much better and the other was well eight years after operation. Ghormley and Adson advise the use of a Taylor brace or corset in most cases.

REPORT OF CASE

On Christmas 1928 R. D. P., a college freshman who had "run the hundred in ten seconds" (the timing of this feat was not official), encountered an empty cardboard box on the sidewalk. Kicking it enthusiastically, he was seized with a pain in the middle of the back, radiating around the short ribs, especially on the right, and downward. When he overtook the box it seemed to him a good idea to repeat the maneuver "to get the kink out." He was unsuccessful in this attempt, so he spent the rest of the day in bed. After that he suffered "a pretty constant sense of sharp pressure" over the lower dorsal vertebrae which kept him in bed most of the time. Baking and massage with various liniments gave no relief. In February he felt a "knot" over the eleventh dorsal vertebra. Pressure on this caused excruciating pain which radiated around to the right groin. Movement of the back, especially extreme flexion, caused similar pain. Chronically diseased tonsils were hopefully removed, but there was no improvement.

On March 13, 1929 the patient was a healthy looking youth of 18. A faint diastolic murmur was heard in the fourth interspace to the left of the sternum. The blood pressure fluctuated from 160/84 to 140/56. The back was held rigid. Over the right half of the eleventh thoracic vertebra a tumor about 4 cm. in diameter protruded 2 or 3 cm. It looked and felt like a mass of tangled veins: neither pulsation nor bruit was observed. Below the eleventh rib to the right of the midline, extending down to the ilium, there was an area of hyperesthesia which went around and across the abdomen, though it was less noticeable in front. Sensory changes (diminution in touch, pain and heat) were detected in the lower extremities. Position sense and vibratory sense, however, were unimpaired. The patellar reflexes were slightly hyperactive. Ankle clonus, present on the right, was sustained for only a few jerks on the left. The bulbocavernosus reflex was absent on each side, and the anal sphincter reflex diminished.

X-ray studies of the spine were not enlightening.

When a needle was inserted into the tumor, blood welled out to push back the plunger of the attached syringe. A few days later the Queckenstedt test established the presence of complete intrathecal block; the clear spinal fluid showed a "heavy trace" of globulin (Pandy and Ross-Jones tests).

To rule out possible spinal metastasis from a hypernephroma, Dr. Montague L. Boyd was called in consultation. He found no evidence of tumor of the genitourinary tract but attributed "an abnormal relaxation of the bladder and lack of sensitiveness of the kidney pelves" to a lesion of the spinal cord.

While I suggested that the lesion might be a "vascular tumor" originating in a congenital anomaly, it was the consensus that operation was indicated. We thought that, if complete removal of the mass should prove impossible, at least a biopsy might be helpful. Accordingly, on March 20, 1929 the late Dr. Charles E. Dowman exposed the tumor. He encountered "tremendous hemorrhage (which) could only be controlled after packing with very hot gauze and eventually placing in a muscle transplant. Several pieces of tumor were curetted away for microscopic study." These bits were vascular and friable; one contained a spicule of bone.

Dr. Everett L. Bishop rendered the following report:

"Microscopic: Sections show two different structures. In some portions there is a moderately dense fibrous stroma in which are numerous small capillaries and numerous giant cells of foreign body type. These cells are somewhat smaller than those usually seen in bone tumors, and the spindle cells of the stroma are somewhat hyperchromatic (fig. 1).

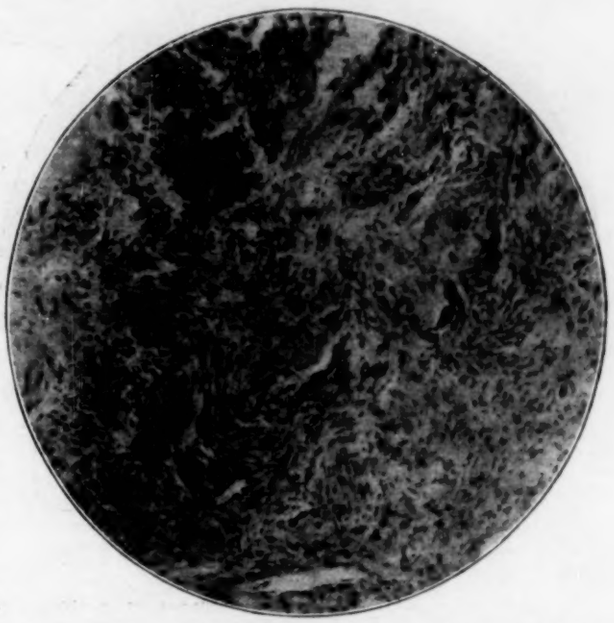

Fig. 1.—Section showing fibrous stroma of slightly hyperchromatic spindle cells with interspersed capillaries of giant cells of foreign body type.

"Other portions of the tumor show closely packed large and small vessels with poorly formed walls, the separating tissue being cellular and hyperchromatic spindle cells. No giant cells are seen in this area. A small area of newly formed osteoid material is seen (fig. 2).

"Diagnosis: This is probably an osteogenic sarcoma of telangiectatic type, the diagnosis being based on the structure described in paragraph 2. In any type of malignant bone tumor areas of giant cells of epulis type may be found due to absorbing bone. In any event, heavy x-ray is indicated."

In accordance with Dr. Bishop's advice, Dr. W. Pope Baker on March 25 administered roentgenotherapy as follows: centered over the eleventh thoracic vertebra; port 20 cm. in diameter, target-skin distance 45 cm., filter 0.25 mm. copper and 1 mm. of aluminum, 150 kilovolt peak, 15 milliamperes, ten minute exposure time. Within twenty-four hours the patient volunteered that he felt better. Roentgenotherapy was repeated, using the same factors, on the 27th and the 29th. The boy left the hospital a few days later free of symptoms. Dr. Baker gave him similar treatments on April 26, 28 and 30.

Frequent neurologic examinations were made. By June 14 ankle clonus had cleared up, the bulbocavernosus and anal reflexes were active and the boy was encouraged to lead a

normal life. By the end of the year there were no sensory changes, the precordial murmur was gone and the blood pressure determinations were consistently within the normal range. After he was graduated from college, examinations were made but once a year. Only bronzing of the skin with moderate telangiectasis (not present before roentgenotherapy) of the irradiated area remain.

In March 1942 the patient applied for a commission in the armed forces. The commission was awarded after I submitted a detailed report, including the photomicrographs. When last heard from (April 24, 1943) he was on active service.

COMMENT

The article by Bailey and Bucy in THE JOURNAL of May 25, 1929 brought fresh hope to Dr. Boyd and me. The syndrome described in that paper so perfectly fitted this case that independently we jumped to the conclusion that it must be one of benign hemangioma. The roentgenograms were then restudied by me, however, and I was unable to detect the criteria set up

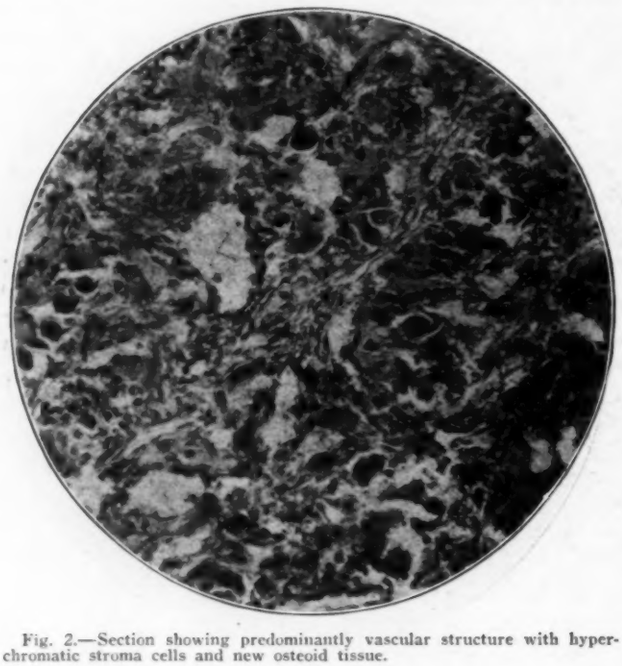

Fig. 2.—Section showing predominantly vascular structure with hyperchromatic stroma cells and new osteoid tissue.

for the diagnosis of cavernous hemangioma. I regret that in the intervening years the original plates have disappeared.

On April 5, 1943 Dr. Bishop wrote:

> On many occasions before leaving on service I have reviewed my sections of the tumor and each time I found it difficult to get away from the original diagnosis of osteogenic sarcoma. You will remember that I sent a section to [another specialist on neoplastic diseases], who also felt that the tumor was sarcomatous. However, on the basis of my frequent studies of his case and the subsequent developments, I am now inclined to the opinion that this was one of the peculiar hemangiomas of the vertebra rather than a fully malignant tumor. Certainly there is much in the histology of the biopsy fragments to indicate a vascular tumor—poorly formed blood spaces, hyperplastic endothelium—in addition to and in spite of the active and hyperchromatic spindle cell stromal cells. It would be fine to report a "cured" case of osteogenic sarcoma of the vertebra but you cannot do it on this case; the diagnosis would be questioned instantly and rightly so.

He added that he had seen the patient often when he was on duty at that station. "The last time I saw him he was in excellent shape (except for a touch of athlete's foot!)."

It is to be emphasized that the patient was kept under close observation for five months after the biopsy, and a complete neurologic examination was done at intervals of three months for an additional two years and at least once a year until 1942. During all these years he has led a normal, active life, and he has not needed a brace of any kind.

The high arterial pressure observed in 1929 is best explained, in my opinion, as the result of worry over a serious illness (he knew that several of the attending physicians considered him doomed) by a boy with the temperament characteristic of a sprinter. The murmur, verified by Dr. R. Hugh Wood in 1929, has not been heard since that year.

Clinically, this is a case of hemangioma of the vertebra.

Since severe backache usually leads in time to x-ray studies of the spine, roentgenologists should bear in mind the possibility of hemangioma of the vertebra. Obviously, if compression of the cord has been great enough over a sufficient length of time, it will result in permanent damage and eventually in complete destruction of function. This, as brought out by Ferber and Lampe,[3] explains the failure of roentgenotherapy in some cases. It must be stressed again that if irradiation alone is employed the patient should be watched carefully and, if improvement is not rapid, more drastic measures should be considered. Certainly surgery should not be attempted until roentgenotherapy has failed or until paraplegia has developed.

SUMMARY

Symptoms suggesting tumor of the spinal cord should lead to an investigation of the possibility of hemangioma of the vertebra. If such a diagnosis is made before the cord has been irreparably damaged, roentgenotherapy may be expected to effect a cure.

Sixty-five cases of hemangioma of the vertebrae resulting in compression of the cord have been assembled. In 12 of these cure was reported from the use of roentgenotherapy alone. The patient who is the subject of this report was 18 years old when first examined three months after the onset of symptoms; roentgenotherapy by Dr. W. Pope Baker has given him fourteen years of health and he is now serving in the armed forces of his country.

Number of Doctors in China.—Out of 12,000 doctors in China, probably over 6,000 are in private practice. An analytic study of these figures will reveal the following interesting points: (*a*) Only 60 per cent of the total are duly qualified doctors, the balance being apprentice trained practitioners who were permitted to register up to 1937; (*b*) 75 per cent are concentrated in the main ports of the six coastal provinces; (*c*) 92 per cent are under the age of 50, and 67 per cent under the age of 40, showing the relatively recent development of medical schools. . . . Probably one half of the population still believe more in native or herb medicine than in Western medicine. Thinking people, however, do not consider that this is a complicating factor of any permanent importance. As the health education of the masses is developed and as modern medical facilities are improved, the demand for native medicine will undoubtedly decrease. Unfortunately, the native herb doctors have introduced a political element into the problem, being numerically as strong as the Western style practitioners and politically influential in certain government circles. As a result, some official recognition has been granted to the status of native medicine by the establishment of a college of native medicine under government auspices and by the local registration of native practitioners.—Sze, Szeming: China's Health Problems, Washington, D. C., Chinese Medical Association, 1943.

Clinical Notes, Suggestions and New Instruments

FULMINATING MENINGOCOCCEMIA WITH PURPURA, MENINGITIS AND FOCAL NECROSIS OF PITUITARY

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This case of fulminating meningococcemia is reported because, despite a clinical course typical of acute adrenal failure due to hemorrhage into the adrenals (Waterhouse-Friderichsen syndrome), necropsy revealed focal necrosis of the pituitary and no definite alterations in the adrenal glands.

REPORT OF CASE

L. Z., a man aged 36, a physician, was admitted to the hospital on Dec. 2, 1942 with the chief complaints of malaise and headache of about twenty hours' duration.

During the evening of the preceding day the patient began to have malaise, headache and occasional slight chills. He came to work next morning and performed a necropsy. He did not feel well and vomited after eating lunch; his temperature was 38.5 C. (101.3 F.). On returning home he felt progressively worse and was sent to the hospital.

On examination the patient appeared acutely but not severely ill. The pulse rate was 96 and the respiratory rate 24 per minute. The pharynx was slightly reddened, the lungs were normal and there was no rigidity of the neck.

The routine urine examination revealed no abnormalities. The white blood count was 26,000 per cubic millimeter. A roentgenogram of the chest was normal.

On the morning following hospitalization (December 3) the temperature rose to 39.7 C. (103.4 F.) and the skin became covered with numerous petechiae. Large ecchymotic areas appeared rapidly on the legs, elbows, abdomen and back, and there were petechial hemorrhages in the conjunctivas. There was no rigidity of the neck, and Kernig's sign was negative. Blood for culture was taken. A platelet count showed 80,000 platelets per cubic millimeter, the clotting time was 5 minutes 15 seconds, and the bleeding time was 19 seconds. A spinal puncture showed the fluid to be under a pressure of 280 mm. of water. The fluid was clear and contained 4 cells per cubic millimeter and 142 mg. of sugar per hundred cubic centimeters.

A tentative diagnosis of meningococcemia was made and the patient was started on 3 Gm. of sulfadiazine by mouth. Subsequently both the blood and the spinal fluid cultures were positive for Neisseria intracellularis.

At 2:30 p. m. on December 3 the patient was found in collapse, pulseless and with unobtainable blood pressure. There was further extension of the petechial and ecchymotic rash, and he was cyanosed. A diagnosis of hemorrhage into the adrenal glands (Waterhouse-Friderichsen syndrome) was made. One thousand cc. of isotonic solution of sodium chloride, 1 cc. of epinephrine (1:10,000 solution), 0.5 Gm. of aminophylline, 10 cc. of adrenal cortex extract and 2 Gm. of sulfadiazine were administered intravenously. The patient regained consciousness and vomited, and the blood pressure rose to 80 systolic and 60 diastolic.

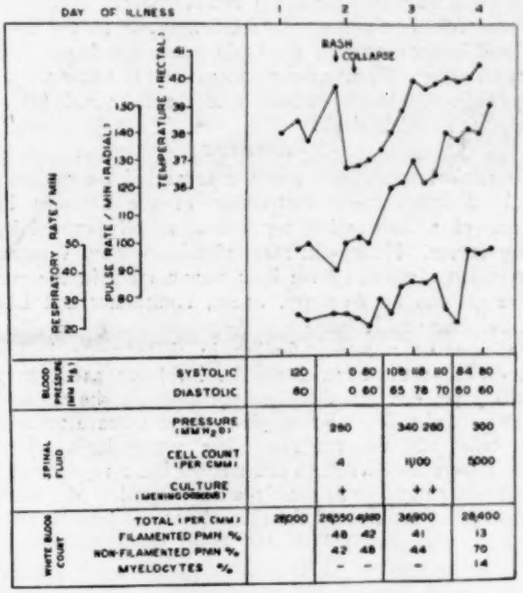
The subsequent course is recorded in the graph. The patient became comatose during the evening of December 3 and had a generalized convulsion. Next day signs of meningitis were present. The spinal fluid was milky and contained 11,100 cells, many of them polymorphonuclears; intracellular gram-negative diplococci were seen on the smear. He was continued on sulfadiazine; a total of 13 Gm. was given and on December 4 the blood level was 9 mg. and on December 5 20 mg. per hundred cubic centimeters. He also received 60,000 units of meningococcus antitoxin intravenously in two doses and two transfusions, one of plasma and the other of whole blood. Adrenal cortex extract, 10 cc. every four hours for a total of 100 cc., two additional injections of 1 cc. of epinephrine, four intramuscular injections of 5 mg. each of desoxycorticosterone acetate in oil and intravenous infusions of saline solution and dextrose were given for the adrenal insufficiency. Sedation by morphine and an oxygen tent were used supportively.

The blood pressure remained at a satisfactory level, but he did not regain consciousness and the pulse increased steadily in rate and became weaker in volume. He had several more generalized convulsions and was cyanosed.

On December 5 the blood pressure began to drop, the respiratory rate rose and coarse moist rales were heard throughout the lungs. The patient died rather suddenly at 4:15 p. m., about ninety hours after the onset of his illness.

Necropsy.—There were numerous ecchymotic areas on the skin, particularly on the lower extremities; some areas measured 3 by 4 cm. in diameter. A petechial spot was present in each conjunctiva, and there was extravasation of blood between the teeth and in the buccal mucosa.

The cerebral hemispheres and the cerebellum were covered with a layer of thin yellow-green exudate lying in the sub-



Course during last four days.

arachnoid space and particularly prominent in the sulci and along the course of the blood vessels. Sections of the brain were normal.

The right lung weighed 560 Gm. and the left 865 Gm. The left lung was consolidated in a spotty manner, and consolidation was also present at the base of the right lung. Mucopurulent exudate was expressed on cut section from the bronchioles. The heart weighed 280 Gm. and the musculature was flabby.

The mucosa of the stomach showed multiple petechial hemorrhages, which were also encountered occasionally in the small and large intestine.

The liver weighed 2,060 Gm. and showed fatty infiltration. The gallbladder contained about fifty small gallstones. The spleen weighed 220 Gm. and was firm and tense, with slight softening of the pulp on section.

The adrenals were externally normal. On cut section petechiae were seen in the substance, particularly in the medulla of the left organ.

The kidneys weighed 200 Gm. each. There were multiple petechial hemorrhages in the mucosa of the pelvis.

Microscopically, sections of the brain showed irregularly distributed purulent exudate in the meninges. The cells were usually polymorphonuclears, with some macrophages and red blood cells. Lymphocytes and macrophages also were observed

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in some areas of subcortical white matter. There were scattered small perivascular hemorrhages in the cerebral cortex. No organisms were found in the meningeal exudate.

In the glandular portion of the pituitary were three areas of coagulation necrosis, the largest measuring 2 by 5 mm., involving both epithelial and stromal elements. Suppuration and infiltration by polymorphonuclear cells were present in the adjacent meninges.

Sections of the lungs showed extensive patchy bronchopneumonia, congestion and focal hemorrhages. The exudate in the alveoli contained a moderate number of intracellular and extracellular, large, gram-positive cocci. Focal necrosis of the mucosa and purulent exudate were encountered in the bronchi.

Sections of the adrenals showed irregular congestion with engorgement of the sinuses; in a few small areas hemorrhage was present. The cytoplasm of the cortical cells was irregularly vacuolized. Focal lymphocytic infiltration involved chiefly the medullary portion.

There were focal hemorrhages in the loose subepithelial connective tissue of the kidney pelves, and superficially denuded areas in the small intestine. The heart showed a toxic myocarditis, the liver was infiltrated with fat, and there was slight cholecystitis.

The final diagnoses were (1) meningococcic septicemia, (2) meningococcic meningitis, (3) focal necrosis of the pituitary, (4) focal hemorrhages in the brain, meninges, lungs, adrenals and renal pelves, (5) bronchopneumonia and bronchitis, (6) toxic myocarditis, (7) fatty infiltration of the liver and (8) cholecystitis with cholelithiasis.

COMMENT

The clinical appearance and the course of the patient were typical of hemorrhagic destruction of the adrenals in the presence of a fulminating septicemia, usually caused by the meningococcus. Ninety-six cases of this so-called Waterhouse-Friderichsen syndrome have been accumulated in the comprehensive reviews by Aegerter, Sacks, Kunstadter and Lindsay, Rice, Selinger and Robins.[1]

The essential necropsy finding in these cases is massive hemorrhage in the adrenal glands, involving particularly the medullary portion. In this case the adrenals showed vascular congestion and a few microscopic areas of extravasation of red blood cells into the medulla. The morphologic alterations certainly were insufficient to account for the symptoms of acute adrenal failure and were merely a manifestation of generalized purpura that also involved the skin, the mucosa of the intestinal tract and the renal pelves, the lungs and the brain. The focal areas of necrosis in the anterior pituitary were a striking finding. It is possible that the syndrome resulted from the damage to the pituitary, alone or in combination with the minimal adrenal changes and the effects of the septicemia.

Treatment with sulfadiazine, meningococcus antiserum, intravenous saline solution and dextrose, epinephrine and adrenal cortex extract were apparently temporarily effective. The patient recovered from the extreme collapse and the meningitis was improving. Similar measures were undertaken by Carey[2] in a woman aged 27 with meningococcemia who recovered after a clinical course that was compatible with the diagnosis of Waterhouse-Friderichsen syndrome. It seems improbable that this therapy protected the adrenals from massive destruction.

SUMMARY

A man aged 36 had fulminating meningococcemia with purpura, meningitis and focal necrosis of the pituitary. The clinical course was typical of the Waterhouse-Friderichsen syndrome, but no definite changes were present in the adrenals.

1. Aegerter, E. E.: The Waterhouse-Friderichsen Syndrome, a Review of the Literature and a Report of Two Cases, J. A. M. A. **106:** 1715 (May 16) 1936. Sacks, M. S.: Fulminating Septicemia Associated with Purpura and Bilateral Adrenal Hemorrhage—Waterhouse-Friderichsen Syndrome: Report of Two Cases with Review of the Literature, Ann. Int. Med. **10:** 1105 (Feb.) 1937. Kunstadter, R. H.: The Waterhouse-Friderichsen Syndrome, Arch. Pediat. **56:** 489 (Aug.) 1939. Lindsay, J. W.; Rice, E. C.; Selinger, M. A., and Robins, Leroy: The Waterhouse-Friderichsen Syndrome: Acute Bilateral Suprarenal Hemorrhage, Am. J. M. Sc. **201:** 263 (Feb.) 1941.

2. Carey, T. N.: Adrenal Hemorrhage with Purpura and Septicemia (Waterhouse-Friderichsen Syndrome) with Recovery; Case Report, Ann. Int. Med. **13:** 1740 (March) 1940.

ETIOLOGY OF VARICOSE VEINS FROM AN ANATOMIC ASPECT, BASED ON A DISSECTION OF THIRTY-EIGHT ADULT CADAVERS

Sherman A. Eger, M.D., and Stephen L. Casper, M.D.
Philadelphia

A review of the recent literature relative to the etiology of varicose veins in the lower extremities shows that there is a tendency to accept certain factors as significant. These are chiefly heredity, trauma, increased postural strain, compression or constriction of veins and phlebitis, which may destroy the valves in the venous system (Christopher[1]). With the exception of phlebitis, it was felt that the other factors per se do not play an essential role, as it seemed logical that there might be some basic anatomic factor to explain the development of this condition.

Valvular Distribution in External Iliac and Femoral Veins Proximal to the Orifice of the Internal Saphenous Vein in 38 Cadavers

	Number	Per Cent
No vein contained more than 1 valve		
Bilateral absence	3	7.9
Unilateral absence	11	28.9
Right	4	10.4
Left	7	18.5
Total absence on one or both sides	14	36.8
Valve absent in right external iliac but present in femoral	21	55.2
Valve absent in left external iliac but present in femoral	20	52.6
Valves absent bilaterally in external iliac but present in femoral	14	36.8
Valves absent bilaterally in femoral but present in external iliac	0	0
Valve absent in right femoral but present in external iliac	4	10.4
Valve absent in left femoral but present in external iliac	2	5.2

With this in mind, the following hypothesis is offered:

1. Since it is definitely known that there are no valves in the inferior vena cava and common iliac veins, it is the role of the valves in the external iliac veins to support the column of blood when in the upright position.

2. Absence of valves in the external iliac veins imposes a greater burden on the valves in the femoral veins.

3. Absence of valves in both the external iliac and femoral veins, above the orifice of the great saphenous, imposes an even greater burden of support on the valves of the latter vessel; in other words, on the superficial circulation resulting in varicosities.

In order to evaluate this theory, a study was made of 38 adult cadavers. This consisted in determining the respective number of valves in the external iliac and femoral veins to the level of the orifice of the great saphenous veins. The results of this investigation are clearly outlined in the accompanying table.

CONCLUSIONS

1. On an anatomic basis there is a 36.8 per cent minimal potential incidence of varicose veins in the lower extremities.

2. This potential incidence is further increased by the absence bilaterally in 36.8 per cent and unilaterally in 52 to 55 per cent of the valves in the external iliac veins with only one valve in each of the femoral veins above the orifice of the internal saphenous.

From the Jefferson Medical College and Hospital.

Dr. J. Parsons Schaeffer, director of the Daniel Baugh Institute of Anatomy, Jefferson Medical College, provided the material used in this study.

1. Christopher, Frederick: Textbook of Surgery, ed. 3, Philadelphia, W. B. Saunders Company, 1942.

3. These varicosities should develop unilaterally in 28.9 per cent and bilaterally in 7.9 per cent.

4. The left lower extremity should be involved approximately twice as frequently as the right.

5. No vein in this series contained more than one valve.

2029 Delancey Street.

URINARY EXCRETION OF BISMUTH FOLLOWING LARGE BUT NONFATAL DOSE OF BISMUTH SUBSALICYLATE

JOSEPH SEIFTER, M.D., CLEVELAND, AND
CAPTAIN FRANK M. MCDONALD
MEDICAL CORPS, ARMY OF THE UNITED STATES

A single dose of 9 cc. of bismuth subsalicylate in oil containing 675 mg. of elementary bismuth was injected into the left buttock of a man aged 47. The injection site was incised on the following day and two cigaret drains were installed. The lack of drainage and the x-ray film indicated that the bismuth suspension had spread along the fascia. The subject was released twenty-eight days after the injection. During this period of observation he developed pigmentation and ulceration of the oral and pharyngeal mucosae, moderate fever, leukocytosis, albuminuria, and high levels of bismuth in the urine.

Recovery of Bismuth

Day	Mg. Bismuth
1	10.40
2	9.22
3	8.40
4	5.70
5	16.12
6	6.66
7	9.77
8	12.53
9	11.50
10	9.35
11	6.17
12	9.30
13	9.10
14	12.15
‡ 15, 16, 17, 18	10.64†
‡ 19, 20, 21	8.61†
‡ 22, 23, 24	4.83†

‡ Pooled specimens. † Daily average for the pool.

The bismuth in each of the twenty-four hour urine specimens was estimated by a method already described.[1] A total of 245.89 mg. of bismuth was recovered in the sequence recorded in the table.

(The studies terminated when the patient's request for release was granted.)

The patient received a ninefold dose of bismuth subsalicylate and over a period of three and one-half weeks excreted 37 per cent of it in the urine. The maximum rate of excretion was gradually reached in two weeks, and half this value two weeks later. The percentage of bismuth excreted and the curve of excretion resembled those obtained with clinical doses of bismuth subsalicylate in oil [2] except that the daily levels were considerably higher.

From the Department of Pharmacology and the Department of Dermatology and Syphilology, Western Reserve University School of Medicine.

1. Sollmann, Torald, and Seifter, Joseph: Intravenous Injections of Soluble Bismuth Compounds: Their Toxicity, and Their Sojourn in the Blood and Organs, J. Pharmacol. & Exper. Therap. **74**: 134, 1942.

2. Sollmann, Torald: A Manual of Pharmacology, ed. 6, Philadelphia, W. B. Saunders Company, 1942.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

AUSTIN E. SMITH, M.D., Secretary.

BISMUTH SUBSALICYLATE (See New and Nonofficial Remedies, 1943, p. 222).

The following dosage forms have been accepted:

CHEPLIN BIOLOGICAL LABORATORIES, SYRACUSE, N. Y.

Ampuls Bismuth Subsalicylate in Oil with Chlorobutanol 3%: 0.13 Gm. in 1 cc. A suspension of bismuth subsalicylate in olive oil containing in each cubic centimeter 0.13 Gm. of bismuth subsalicylate and chlorobutanol 3 per cent.

Bismuth Subsalicylate in Oil with Chlorobutanol 3%: 30 cc., 60 cc., 100 cc. and 480 cc. bottles. A suspension of bismuth subsalicylate in olive oil containing in each cubic centimeter 0.13 Gm. of bismuth subsalicylate and chlorobutanol 3 per cent.

SHARP & DOHME, INC., PHILADELPHIA

Bismuth Subsalicylate in Oil with Chlorobutanol 3%: 30 cc., 100 cc. and 500 cc. A suspension of bismuth subsalicylate in peanut oil containing in each cubic centimeter bismuth subsalicylate 0.13 Gm. with 3 per cent of chlorobutanol added.

LIVER INJECTION (See New and Nonofficial Remedies, 1943, p. 392).

The following dosage forms have been accepted:

JOHN WYETH & BROTHER, INC., PHILADELPHIA

Liver Injection (Crude) (Injectable), 1 U. S. P. Unit per Cc.: 10 cc. multiple dose ampoules. A sterile aqueous solution of liver preserved with 0.5 per cent phenol.

Liver Injection (Crude) (Injectable), 2 U. S. P. Units per Cc.: 10 cc. multiple dose ampoules. A sterile aqueous solution of liver preserved with 0.5 per cent phenol.

SULFANILAMIDE (See New and Nonofficial Remedies, 1943, p. 175).

The following dosage forms have been accepted:

AMERICAN PHARMACEUTICAL CO., INC., NEW YORK

Tablets Sulfanilamide: 0.324 Gm. and 0.486 Gm.

THE WARREN-TEED PRODUCTS CO., COLUMBUS, OHIO

Tablets Sulfanilamide: 0.33 Gm. (5 grains).

SULFAPYRIDINE (See New and Nonofficial Remedies, 1943, p. 179).

The following dosage form has been accepted:

AMERICAN PHARMACEUTICAL CO., INC., NEW YORK

Tablets Sulfapyridine: 0.5 Gm.

SULFATHIAZOLE (See New and Nonofficial Remedies, 1943, p. 182).

The following dosage forms have been accepted:

AMERICAN PHARMACEUTICAL CO., INC., NEW YORK

Tablets Sulfathiazole: 0.5 Gm.

BUFFINGTON'S, INC., WORCESTER, MASS.

Tablets Sulfathiazole: 0.5 Gm. and 0.25 Gm.

DIGITALIS (See New and Nonofficial Remedies, 1943, p. 289).

The following dosage form has been accepted:

BURROUGHS WELLCOME & CO., INC., NEW YORK

Tincture Digitalis: 1 fluidounce, 4 fluidounce and 1 pint bottles.

NIKETHAMIDE (See New and Nonofficial Remedies, 1943, p. 317).

The following dosage form has been accepted:

BUFFINGTON'S, INC., WORCESTER, MASS.

Ampuloids Sterile Solution Nikethamide 25% W/V: 2 cc. and 5 cc.

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SATURDAY, SEPTEMBER 18, 1943

SALMONELLA INFECTIONS

The genus Salmonella comprises gram-negative and non-spore forming bacilli with known microscopic and cultural characteristics and with considerable pathogenic significance for human beings and animals. In a recent review of the present status of the Salmonella problem, Bornstein [1] says that the human diseases caused by members of this group may be termed Salmonella fever, septicemia or gastroenteritis regardless of the type that causes the infection, although there are differences in relative incidence.

The clinical course of salmonella fever is milder and less typical than that of typhoid. With few exceptions fever and malaise are the dominating symptoms, usually lasting from one to three weeks. In some cases leukopenia is present. Not infrequently the appendix is removed. Blood cultures may be positive early in the disease and stool cultures may be positive at the onset or may remain negative for weeks. In the septicemic forms the distribution and pathologic effects of Salmonella are similar to those caused by the pyogenic cocci. Intestinal involvement is usually absent in adults. Diagnosis may be difficult, but blood invasion is evident from the high remittent fever and early finding of positive blood cultures or from the localization of the infection in various tissues. Gastroenteritis from Salmonella is rarely fatal in adults except in those who have been weakened by other disease or old age. There is an interval of eight hours to one day between the consumption of the contaminated food and the first symptoms. Vomiting is usually the first sign, but it may be absent. Diarrhea in adults is less severe than in dysentery and the stools are rarely bloody. In infants there is a greater variety of manifestations than in adults. With proper care the disease usually subsides in less than one week. Surgical removal of purulent lesions or drainage of abscesses produces good results comparable to those obtained in other pyogenic infections.

Treatment of these infections with polyvalent anti-Salmonella serum has not been tried extensively and preliminary trials have been inconclusive. Vaccine therapy of acute infections is not of value and may be harmful. Chemical interest has recently been concentrated on sulfonamide therapy. Choice of drug varies with the clinical picture and the type of Salmonella causing it. Although some of the sulfonamides appear promising, final conclusions cannot yet be drawn.

Bornstein points out that these infections constitute an important public health problem. Food which has not been prepared or kept with necessary cleanliness may become the source of Salmonella infection. Eggs should not be consumed in a raw condition as in mayonnaise. The control of Salmonella infection in animals is a veterinary problem of importance. The human source of infection must not be neglected. Bacteriologc examinations in all cases of diarrhea and their contacts as far as possible together with complete reporting of bacteriologically diagnosed Salmonella infections would, after a few years, clarify the question of relative public health importance of the various Salmonella types. It would doubtless lead also to the establishment of much more effective control measures.

1. Bornstein, Siegbert: The State of the Salmonella Problem, J. Immunol. **46**: 439 (June) 1943.

CHRONIC FLUORINE INTOXICATION

Distribution of the element fluorine is so widespread throughout nature that a small intake of the element is practically unavoidable. Fluorides are general protoplasmic poisons, probably because of their capacity to modify the metabolism of cells by changing the permeability of the cell membrane and by inhibiting certain enzyme systems. The exact mechanism of such actions is obscure. The sources of fluorine intoxication are drinking water containing 1 part per million or more of fluorine, fluorine compounds used as insecticidal sprays for fruits and vegetables (cryolite and barium fluosilicate) and the mining and conversion of phosphate rock to superphosphate, which is used as fertilizer. The fluorine content of phosphate rock is about 4 per cent. During conversion to superphosphate, about 25 per cent of the fluorine present is volatilized and represents a pouring into the atmosphere of approximately 25,000 tons of pure fluorine annually. Another source of fluorine intoxication is from the fluorides used in the smelting of many metals, such as steel and aluminum, and in the production of glass, enamel and brick.

The known effects of chronic fluorine intoxication are those of hypoplasia of the teeth, which has been called mottled enamel, and of bone sclerosis. The classic epidemiologic studies of McKay [1] clearly demonstrated the relationship of the fluorine content of the domestic water supply to the anomaly of mottled enamel of the teeth. The condition is now known to be endemic in isolated communities on every continent. In the United

1. McKay, F. S.: Mottled Enamel: The Prevention of Its Further Production Through a Change of the Water Supply at Oakley, Ida., J. Am. Dent. A. **20**: 1137 (July) 1933.

States there are about four hundred known endemic areas distributed among twenty-eight states. Dean and McKay [2] succeeded in the unique epidemiologic experiment of arresting the production of the endemic mottled enamel at Oakley, Ida., Bauxite, Ark., and Andover, S. D., by changing the common water supply from one containing amounts of fluorides toxic to calcifying dental enamel to one the fluoride content of which does not exceed the permissible maximum, i. e. 1 part per million. Children using domestic waters containing as little as 1 part per million of fluorine experience only a half to a third as much dental decay as comparable groups using fluoride-free water, such as the Lake Michigan or the Mississippi River waters. The same inverse relationship has been observed in England, South India and North Africa. Apparently teeth require traces of fluorine for optimum dental health, although excessive amounts may result in the disfiguring condition known as mottled enamel.

Møller and Gudjonsson [3] described in 1932 a peculiar form of bone sclerosis in workers exposed to cryolite dust for a number of years. An exhaustive study of the various aspects of fluorine intoxication was made by Roholm.[4] Loss of weight, impairment of growth in young persons, loss of appetite, anemia and cachexia are mentioned among the general symptoms of chronic intoxication. Cases of fluorine osteosclerosis were reported by Wilkie,[5] Bishop,[6] Shortt,[7] Pandit and his associates [8] and Linsman and McMurray.[9] The bone changes are those of thickening of the bone lamina and an increase in the whiteness of the bone shadows on the roentgenogram to an actual opacity of the bones and calcification of the ligamentous attachments. Anemia was present in some of the cases and was probably due to the displacement of the bone marrow by thickened trabeculae. In Pandit's experience, continued residence over fifteen years in the endemic area was necessary in the case of adults to bring about symptoms of chronic intoxication. The incidence and severity of the disease had a definite relationship to the economic and nutritional status of the community. A pronounced deficiency of the vitamin C factor in the diet was especially associated with a severe incidence of the disease. Factors other than the amount of fluorine in the water supply may assume a contributory role in the development of chronic fluorine intoxication.

2. Dean, H. T., and McKay, F. S.: Production of Mottled Enamel Halted by a Change in Common Water Supply, Am. J. Pub. Health **29:** 590 (June) 1939.
3. Møller, F. P., and Gudjonsson, V.: Acta radiol. **13:** 269, 1932.
4. Roholm, K.: "Fluorine Intoxication," London, H. K. Lewis, 1937.
5. Wilkie, J.: Two Cases of Fluorine Osteosclerosis, Brit. J. Radiol. **13:** 213 (June) 1940.
6. Bishop, P. A.: Bone Changes in Chronic Fluorine Intoxication, Am. J. Roentgenol. **35:** 577 (May) 1936.
7. Shortt: Indian J. M. Res. **25,** 1937.
8. Pandit, C. G.; Raghavachari, T. N.; Rao, D. Subba, and Krishnamurti, V.: Endemic Fluorosis in South India: A Study of the Factors Involved in the Production of Mottled Enamel in Children and Severe Bone Manifestations in Adults, Indiana J. M. Res. **28:** 533 (Oct.) 1940.
9. Linsman, J. F., and McMurray, C. A.: Fluoride Osteosclerosis from Drinking Water, Radiology **40:** 474 (May) 1943.

VITAMIN DEFICIENCY BY INTERFERENCE

Vitamin deficiency may occur in man or animals despite the presence in the diet of a normally adequate amount of the appropriate vitamin. Perhaps the most widely known example of this is the occurrence of a vitamin K deficiency—characterized by a low prothrombin level in the blood and a consequent tendency to hemorrhage—in man or animals when bile salts are prevented from reaching the intestine. Whether present in the diet or synthesized by intestinal micro-organisms, fat soluble vitamin K is of little value to the body in the absence of these salts, which are necessary for its proper absorption. Other examples of such "secondary vitamin deficiencies," [1] include avitaminoses observed in animals fed a diet containing a constituent which destroys or makes unavailable a particular essential food factor.

Results of studies on the biotin problem have greatly contributed to our knowledge of vitamin deficiency by interference. The biotin deficiency syndrome was first observed in rats fed a diet containing a large percentage of uncooked egg white. The deficiency symptoms exhibited by the animals were first thought to be due to toxicity of uncooked egg white, but subsequent investigation revealed that something in the egg white combined with the biotin and thereby made it unavailable. The interfering substance proved to be a protein, which has since been given the descriptive name avidin.[2] Cooked egg white is not at all antagonistic to biotin. Biotin deficiency can be experimentally produced in human subjects by incorporating large amounts of dehydrated egg white (200 Gm. a day) in their diet for several weeks.[3] However, biotin deficiency probably never occurs normally in man in the manner in which it was experimentally produced.

The story of Chastek paralysis [4] in silver foxes discloses an extremely interesting example of avitaminosis by interference. When the meat in the diet of foxes being raised for their fur was replaced, for economic considerations, with 10 per cent or more of raw fish, hundreds of animals became ill for no apparent reason and died. The syndrome was characterized by anorexia, weakness, progressive ataxia and spastic paraplegia. Death followed within eighteen to seventy-two hours after onset of the neurologic symptoms. Concerted efforts of a number of investigators have unraveled the story of what happened on the fox farm of Mr. Chastek and on numerous other fox farms in this country. Raw fish has been found to destroy vitamin B_1. Foxes

1. Jolliffe, Norman: Conditioned Malnutrition, J. A. M. A. **122:** 299 (May 29) 1943.
2. Eakin, R. E.; Snell, E. E., and Williams, R. J.: Concentration and Assay of Avidin, the Injury Producing Protein in Raw Egg White, J. Biol. Chem. **140:** 535 (Aug.) 1941.
3. Sydenstricker, V. P.; Sengal, S. A.; Briggs, A. P.; De Vaughn, N. M., and Isbell, Harris: Observations on the "Egg White Injury" in Man and Its Cure With a Biotin Concentrate, J. A. M. A. **118:** 1199 (April 4) 1942.
4. Green, R. G.; Carlson, W. E., and Evans, C. A.: A Deficiency Disease of Foxes Produced by Feeding Fish: B_1 Avitaminoses Analogous to Wernicke's Disease of Man, J. Nutrition **21:** 243 (March) 1941.

on these farms developed thiamine deficiency and died, although their rations when prepared contained a normally adequate amount of the vitamin. The antagonistic substance has not been identified; it may be an enzyme, for it is readily destroyed by cooking the fish. Green [4] and his associates believe that the observations on Chastek paralysis in animals may have some bearing on thiamine deficiency occurring in human beings in certain parts of the Orient. These investigators point out that beriberi is common in those places where raw fish, as well as thiamine poor polished rice, is consumed. However, not all types of fish are equally effective in destroying thiamine.[4] Jolliffe [1] found, on examination of four shipwrecked sailors who had subsisted for several weeks on raw fish and turtle, no clinical evidence of thiamine deficiency.

Still other examples of avitaminoses resulting from interference with an essential food factor are less well characterized. In all cases the diets of the animals were unusual, containing comparatively large amounts of uncooked egg white, raw fish or, in some instances, drugs, and would not be normally considered as human food by persons in this country. These observations on animals are of considerable interest, nevertheless, for they help to elucidate an unusual type of mechanism involved in the development of some avitaminotic conditions.

Current Comment

CAN SELF-APPLIED JIU JITSU CAUSE DEATH?

Newspapers recently reported that a 14 year old school boy in Los Angeles was found dead under circumstances suggesting death from self-applied jiu jitsu, which the boy was in the habit of practicing zealously. Apparently, available medical literature does not contain any reports of death from self-applied jiu jitsu, but the Los Angeles case raises the question whether death can be so caused. Whether voluntary manual compression of the neck in jiu jitsu can cause fatal suffocation seems somewhat doubtful, because the respiratory center in the medulla is so much less sensitive to asphyxia than the motor cortical centers that the muscular contractions of the hands and arms probably would relax or fail of coordination before the cessation of respiratory movements. On the other hand, fatal cardiac syncope may result under various conditions, such as emotional crisis or pleural and other punctures and at times apparently even in the absence of structural, mechanical or toxicologic causes as ordinarily understood. When the cardiac reflexes are especially irritable, sudden death may occur from syncope through the carotid sinus reflex. The late Soma Weiss [1] in a consideration of rapid physiologic death under various conditions mentions a patient who after coronary thrombosis developed such sensitiveness of the carotid sinus reflex that turning the head or gentle manipulation of the skin caused alarming transit asystole. From these considerations it seems possible that self-applied jiu jitsu may cause sudden death from syncope through the carotid sinus reflex. Certainly that possibility cannot be denied.

1. Weiss, Soma: Instantaneous Physiologic Death, New England J. Med. **223**: 793 (Nov. 14) 1940.

ANTIGENIC DIFFERENCES IN HUMAN SERUM

Unexpected reactions in transfusion with compatible blood as determined by cross matching or by blood grouping of the donor and recipient remain largely unexplained. Such reactions may increase in severity on successive transfusions. Are they due to corpuscular antigens not covered by the customary groupings, to the accidental presence of foreign substances of various kinds or to antigenic differences in the plasma or serum of the persons concerned? By absorption of precipitins in the serum of rabbits immunized with human serum Cumley and Irwin [1] obtained results which lead them to conclude that human serum does contain antigenic substances of such different specificities that it "may eventually be classified in terms of antigenic differences, much the same as has been done with the corpuscles." The genetics of any such constitutional serum antigens and their possible practical significance remain to be determined. In view of the increasing use of pooled human plasma the question arises whether serum and perhaps other antigens are present in plasma and then in that case what their fate is in pooled plasma. Here the effects of dilution as well as the possibilities of neutralization by antibodies (precipitins) will require consideration. In war services transfusion with pooled plasma so far is giving apparently uniformly favorable results. Comprehensive reports on the value and safety of pooled plasma will be of great importance in planning for the best means of transfusion after the war.

DIGITALOID DRUGS AND COAGULATION OF BLOOD

Some patients taking digitalis or related drugs appear to be excessively liable to coronary thrombosis and other symptoms indicative of increased coagulability of their blood. According to Macht,[1] who worked on cats and guinea pigs, heparinization of these animals prior to intravenous injections of ouabain and digitalis solutions significantly lowers the toxicity of these drugs—a mechanism which is probably correlated with the thromboplastic effect of digitaloid glucosides observed in vitro. Werch,[2] using rabbits, confirms part of Macht's observations: digifolin given in large amounts intravenously to the rabbit causes a significant decrease in the coagulation time of its blood. These interesting observations have not yet been confirmed in the clinic nor are the therapeutic implications yet clear.

1. Cumley, R. W., and Irwin, M. R.: Individual Specificity of Human Serum, J. Immunol. **46**: 63 (Feb.) 1943.

1. Macht, D. I.: Experimental Studies on Heparin and Its Influence on Toxicity of Digitaloids, Congo Red, Cobra Venom and Other Drugs, Ann. Int. Med. **18**: 772 (May) 1943.

2. Werch, S. C.: Reduction of the Coagulation Time of Rabbit's Blood by Digitalis, Quart. Bull., Northwestern Univ. M. School **17**: 50 (Spring Quarter) 1943.

WAGNER-MURRAY BILL OPPOSED BY AMERICAN BAR ASSOCIATION

At the annual meeting of the American Bar Association held in Chicago, August 23-26, both the assembly, which, in effect, is the convocation of the membership at large, and the house of delegates of the association opposed the enactment of Senate bill 1161 on the grounds that such an eventuality would "establish federal control of the medical profession and the regimentation of doctors and hospitals." Further, the house of delegates put itself on record as being "opposed to any legislation, decree or mandate that subjects the practice of medicine to federal control and regulation beyond that presently imposed under the American system of free enterprise." The house of delegates then requested the association's board of governors immediately "to appoint a special committee to study, analyze and investigate S. 1161 and to give publicity to the recommendations and findings of the special committee and the action of the board of governors thereon." The personnel of this special committee, it is understood, has already been determined by the board of governors and will be announced in the October issue of the *American Bar Association Journal.*

IMMUNIZATION AGAINST INFECTIOUS DISEASES IN LARGE CITIES

The exact extent to which preventive inoculations against diphtheria, smallpox, scarlet fever and typhoid are employed is unknown. Recently Collins and Councell [1] reported a study of the frequency of immunizations against these diseases based on reports from over two hundred thousand households in twenty-eight cities of 100,000 population or more. The cities were selected as being representative for size and geographic location. Immunizations against scarlet fever and typhoid were negligible in frequency as compared with those against diphtheria and smallpox. Diphtheria immunizations were more frequent than smallpox vaccination during the preschool ages, but after the age of 5 the reverse was true. By the age of 8, 61 per cent of the children had been immunized against diphtheria and 85 per cent had been vaccinated against smallpox. Although there was considerable regional variation, in no area were more than 5 per cent immunized to scarlet fever. A similar situation was found for typhoid, though the South was far above any other section in the percentage of immunizations to this disease. The West and North Central areas had the highest percentages of immunizations to scarlet fever. The West had the lowest percentage of diphtheria immunizations from birth through 7 years, but beyond that age the South was lowest. The Northeast, intermediate states and South all had smallpox vaccination rates above 90 per cent by the age of 8, but the North Central and West were low, the latter having reached only about 60 per cent; the latter regions too have the highest smallpox rates. It was concluded that in the preschool ages the percentages of children who had been immunized against diphtheria and smallpox increased definitely with the income. The same was true for diphtheria immunizations during the school ages, but there was little difference in smallpox immunization as between high and low incomes. Scarlet fever and typhoid immunizations increased with income in all age groups, thus indicating that these immunizations are largely the result of individual initiative rather than public programs. Conservative conclusions which might be drawn from this study are that smallpox and diphtheria immunizations have been more thoroughly "sold" to physicians and public health officials than have those against scarlet fever or typhoid; the number of cases of diphtheria and smallpox in the various regions reflect the degree of immunization of the population; the number of cases immunized to scarlet fever and typhoid, however, is insufficient in all communities to affect materially the disease attack rate.

1. Collins, S. D., and Councell, Clara: Extent of Immunization and Case Histories for Diphtheria, Smallpox, Scarlet Fever and Typhoid Fever in 200,000 Surveyed Families in 28 Large Cities, Pub. Health Rep. **58**: 1121 (July 23) 1943.

CARRIÓN'S DISEASE

Carrión's disease refers to both the severe anemic disease called Oroya fever and the less dangerous eruptive condition verruga peruana. The cause of both is infection with Bartonella bacilliformis. Calderon Howe [1] has recently investigated Carrión's disease in the valleys of the Santa Eulalia and Rimac rivers, where the disease is endemic, and in hospitals in Lima, Peru. The transmitter of the disease is the sandfly, Phlebotomus verrucarum being the principal species involved. The disease gets its name from a Peruvian medical student, Daniel A. Carrión, who in 1885 inoculated some blood and tissue from a human verruga nodule into the skin of both his forearms. Some five weeks later he died of typical Oroya fever; this crucial experiment first proved that the eruptive disease and the generalized fever were of identical etiology. Complete protection from the disease can be assured by leaving before nightfall the narrow belt between about 800 and 3,000 meters above sea level where Phlebotomus occurs, since this wild sandfly feeds on human beings and animals only at night. Howe's reports are based on observations on 203 residents of the region in which bartonellosis is endemic. Blood cultures on special Bartonella medium were made for each person. An agglutination test, using formaldehyde treated suspensions of B. bacilliformis, was performed on serum from each patient. Most natives of the endemic areas contract the infection in some form in their earlier years. One attack of Oroya fever or of verruga peruana confers lasting immunity. Preliminary experiments on active immunization are inconclusive. Although the incidence of Carrión's disease is small and its geographic distribution restricted, its interesting features include the two distinct syndromes produced, the strict geographic localization and the distinctive habits of the insect vector.

1. Howe, Calderon: Carrión's Disease, Arch. Int. Med. **72**: 147 (Aug.) 1943; Scient. Monthly, August 1943, p. 125.

MEDICINE AND THE WAR

In this section of The Journal each week will appear official notices by the Committee on War Participation of the American Medical Association, announcements by the Surgeon Generals of the Army, Navy and Public Health Service, and other governmental agencies dealing with medicine and the war, and such other information and announcements as will be useful to the medical profession.

ARMY

DEDICATION OF WOODROW WILSON GENERAL HOSPITAL

The U. S. Army Woodrow Wilson General Hospital at Staunton, Va., was formally dedicated on September 1. Among the speakers on the program were Major Gen. Norman T. Kirk, Surgeon General of the Army; Major Gen. Milton A. Reckord, commanding general of the Third Service Command, and Hon. Major A. Willis Robertson, Member of Congress of the Seventh Virginia District. The 1,500 bed hospital, which was named in honor of Staunton's distinguished son Thomas Woodrow Wilson, the twenty-eighth President of the United States, is of brick construction and is located in the Shenandoah Valley, about 6 miles east of Staunton.

The professional staff at the time of the dedication was as follows:

ADMINISTRATIVE DIVISION

Col. Sidney L. Chappell, commanding officer.
Col. Leonard D. Heaton, assistant post commander.

PROFESSIONAL DIVISION

Col. John Minor, chief of medical service.
Lieut. Col. John H. Lyons, chief of surgical service.
Lieut. Col. Karl D. MacMillan, chief of E. E. N. T. service.
Lieut. Col. Harlan H. Taylor, assistant chief of surgical service.
Lieut. Col. Arthur J. Williams, chief of x-ray service.
Major James F. Binns, chief of outpatient service.
Major Ben L. Boynton, chief of physical therapy section of surgical service.
Major Edgar F. Cosgrove, chief of section of cardiovascular diseases of medical service.
Major Welch M. England, E. E. N. T. service.
Major Raymond M. Kay, assistant chief of medical service.
Major Julius Newman, chief of plastic surgery.
Major Edwin J. Palmer, chief of neuropsychiatric service.
Major Harold H. Snyder, chief of urologic service.
Major Terence L. Tyson, chief of section of general medicine and chief of officers' section of medical service.
Major Erwin D. Zeman, chief of laboratory service.
Capt. Howard M. Ausherman, surgical service.
Capt. Leonard B. Barnard, chief of orthopedic section, surgical service.
Capt. Margil C. Carlisle, medical service.
Capt. Ephraim Horland, neuropsychiatric ward, medical service.
Capt. Ewald M. Jaffe, medical service.
Capt. John J. Malee, surgical service.
Capt. Herman L. Metzger, medical service.
Capt. William E. Strecker, surgical service.
Capt. Richard L. Sutton Jr., medical service.
Capt. Norman F. Szold, surgical service.
Capt. William A. Zavod, medical service.
1st Lieut. Frank R. Boyer, medical service.
1st Lieut. William G. Carman, medical service.
1st Lieut. James R. Carroll, surgical service.
1st Lieut. Edwin C. Faessler, surgical service.
1st Lieut. Harvey P. Feigley Jr., surgical service.
1st Lieut. John S. Hooley, surgical service.
1st Lieut. George A. Hyder, surgical service.
1st Lieut. Brooke B. Mallory, medical service.
1st Lieut. William G. Motel, medical service.
1st Lieut William S. McCune, N. Y. J.
1st Lieut. Frederick C. Reel, E. E. N. T. service.
1st Lieut. Arnold Royal, surgical service.

MAJOR MOIR JR. AWARDED DISTINGUISHED SERVICE CROSS

The War Department has announced that Major William Wilmerding Moir Jr., M. C., U. S. Army, has been awarded the Distinguished Service Cross for extraordinary heroism in action in North Africa. Major, then Captain, Moir, together with members of his paratroop unit, were shot down in their plane near Oran on November 8, according to an Associated Press report. The citation reads: "During the attack in the air and the ensuing strafing on the ground, Captain Moir distinguished himself by extraordinary heroism against the armed enemy by inspiring administration of medical attention to wounded personnel before attention to himself, despite severe wounds to his head and back." Major Moir later was awarded the Order of the Purple Heart and is now in the United States serving at Fort Benning, Georgia. Major Moir graduated from the University of Minnesota Medical School in 1939.

CAPTAIN BUREM AWARDED PURPLE HEART

Capt. Henry S. Burem, M. C., A. U. S., formerly practicing physician in Kingsport, Tenn., has been decorated with the Purple Heart, according to the Rogersville, Tenn., *Review*. Captain Burem, who was serving in North Africa with a motorized medical unit, noticed a land mine in the road over which his unit was advancing. He advanced in front of the unit and shot into the mine in order to explode it. He was hit in the shoulder by shrapnel and, according to recent reports, is recovering from the wound in Oran.

CONFERENCE OF MEDICAL CORPS OFFICERS

A three day conference of medical corps officers from all over the country was held recently at Jefferson Barracks, Missouri. The purpose of this conference was to make them familiar with their newly assigned duties as inspectors for the AAF Convalescent and Rehabilitation Training Program under the direction of Lieut. Col. Howard A. Rusk, Office of the Air Surgeon, Washington, D. C. This program is now functioning in the AAF regional hospitals at West Palm Beach and Coral Gables, Fla.

ARMY PERSONAL

1st Lieut. Martin H. Rush of Fair Haven, N. J., who is on duty with the medical section at the Army Air Field at Rome, N. Y., has been promoted to the rank of captain.

Brig. Gen. Eugen G. Reinartz, commandant of the School of Aviation Medicine, Randolph Field, Texas, recently addressed the Medical Society of Milwaukee County in Milwaukee on "Aviation and the Doctor."

A testimonial dinner was given at the Statler Hotel in Washington, May 25, in honor of Major Gen. James C. Magee, whose term of office as Surgeon General of the Army expired on May 31. About two hundred and fifty officers of the medical department attended.

Lieut. Col. August H. Groeschel, M. C., has become assistant commandant of the Medical Administrative Corps Officer Candidate School at Camp Barkeley, Texas, replacing Col. George E. Armstrong, who has received another assignment. Colonel Groeschel, formerly of Sussex, N. J., previously was director of the department of training at the Medical Administrative Corps school since its founding in the spring of 1942.

Major Norman C. Schroeder, formerly of Kenton, Ohio, was named post surgeon of the Army Air Force Technical Training Command School at Yale University to succeed Lieut. Col. Carl A. Schuck. Major Schroeder graduated from the University of Michigan Medical School, Ann Arbor, in 1924.

NAVY

PERSONNEL OF A HOSPITAL IN THE SOUTH PACIFIC

(The following story was written by Sgt. Garth P. James of Ironwood, Mich., a Marine Corps combat correspondent.)

Somewhere in the South Pacific (delayed).—Members of a Navy hospital unit celebrated their first year of overseas service on the Fourth of July at this South Pacific base.

Pictured here is the medical staff. Seated in the front row are (left to right) Comdr. John G. Manley, chief of surgery; Capt. I. W. Jacobs, chief surgeon of the area; Capt. Robert P. Parsons, retiring commanding officer; Capt. Franklin F. Murdoch, incoming commanding officer; Capt. Richard C. Satterlee, executive officer, and Comdr. Arthur C. Webb, dental officer.

Second row: Lieut. Comdr. William G. Mitchell, chief of medicine; Lieut. Edwin J. Madden of the Dental Corps; Lieut. (jg) Leslie L. O'Connor of the Chaplain Corps; Pharmacist Paul C. Law, U.S.N.; Lieut. Angus M. Brooks (MC), U.S.N.; Lieut. Comdr. Sidney G. Kennedy Jr. (MC), U.S.N.; Lieut. Comdr. James D. Hibbard, MC-V(S), U.S.N.R.; Lieut. Comdr. William A. Coates, MC-V(S), U.S.N.R.; Lieut. Comdr. Niel E. Eckelberry, MC-V(S), U.S.N.R.

Third row: Lieut. (jg) Louis A. Williams, MC-V(S), U.S.N.R.; Lieut. George E. Penny, MC-V(S), U.S.N.R.; Lieut. Edward E. Hause, MC-V(S), U.S.N.R.; Lieut. Robert C. Lofgren, MC-V(S), U.S.N.R.; Lieut. (jg) Julian P. Breillatt (MC), U.S.N.; Lieut. Comdr. Leon Bromberg, MC-V(S), U.S.N.R.; Lieut. Comdr. Bertrand I. Krehbiel, MC-V(S), U.S.N.R.; Lieut. Comdr. Alfred L. Duncombe, MC-V(S), U.S. N.R.; Lieut. (jg) Bernard F. Duwel (MC), U.S.N., the personnel officer; Chief Pharmacist Comer L. Harvill, U.S.N.

Rear row: Lieut. Comdr. Harry B. Burr, MC-V(S), U.S. N.R., and Lieut. Comdr. Paul H. Schraer, MC-V(S), U.S.N.R., the x-ray officer.

Members of a Navy hospital unit at a base in the South Pacific.

Commander Manley was the associate surgeon at St. Agnes Hospital, Philadelphia, before entering the Navy. He lives at 1444 South Bancroft Street in that city.

Captain Jacobs entered the Navy in April 1917. He is a specialist in x-rays and a graduate of Harvard Medical School. His home is in San Diego, Calif.

Captain Parsons also entered the Naval service in May 1917. A graduate of Harvard Medical School, he is a urologist. His home is at 53 West 83d Street, New York.

Captain Murdoch is a specialist in tropical medicine. He lives at 1801 Howard Avenue, San Carlos, Calif.

Captain Satterlee entered the Navy in 1917. He is a graduate of George Washington University Medical School, Washington, D. C., and lives at 1267 28th Avenue, San Francisco.

Commander Webb was attached to the medical staff of Bellevue Hospital, New York, before entering the Navy in January 1942. His wife lives at 23 Mayflower Court, Freeport, N. Y.

Lieutenant Commander Mitchell lives at 214 Atlantic Street, Corpus Christi, Texas. He was associated with the Shannon West Texas Memorial Hospital, San Angelo, Texas, before entering the Navy.

Lieutenant Madden is a graduate of the University of Minnesota Medical School. His wife, Harriett M. Madden, lives at 705 Laurie Street, Alliance, Neb.

Lieutenant O'Connor is the chaplain of the unit. He attended the chaplain's school at William and Mary College, Williamsburg, Va., before coming here and is ordained a Presbyterian minister. His home is in Houston, Texas.

Pharmacist Law lives at 411 West 11th Street, Pueblo, Colo.

Lieut. Brooks, son of Mr. J. H. Brooks of St. Johnsbury, Vt., was associated with the Hartford Hospital, Hartford, Conn., before joining the Navy in April 1942. He is an anesthetist.

Lieutenant Commander Kennedy, formerly resident surgeon at the Grady Hospital, Atlanta, Ga., entered the Navy in February 1943. His wife, Elinor E. Kennedy, lives at 2100 East Mallory Street, Pensacola, Fla.

Lieutenant Commander Hibbard was associated with Wesley Hospital and Wichita Hospital, Wichita, Kan. His home is at 1208 North Imperia Street, Wichita, Kan.

Lieutenant Commander Coates is an x-ray specialist and was associated with the South Side Hospital, Bay Shore, N. Y., before he joined the Medical Corps. His home is at 143 East Main Street, Babylon, N. Y.

Lieutenant Commander Eckelberry was the assistant surgeon at Metropolitan Hospital and instructor in surgery at New York Medical College. His wife lives at Weston Road, Georgetown, Conn.

Lieutenant Williams entered the Navy in September 1942. A specialist in orthopedic surgery, he was the resident surgeon in that subject at the University of Iowa Hospital. His home is at 549 Logan Street Southeast, Grand Rapids, Mich.

Lieutenant Penny was associated with the Flower Fifth Avenue Hospital, New York, as a specialist in diseases of the eye, ear, nose and throat.

Lieutenant Hause entered the Navy in May 1942. Prior to that time he was an assistant resident in neuropsychology at the University of California. His home is at 105 18th Avenue, San Francisco.

Lieutenant Lofgren, son of Mrs. Ruth E. Lofgren of Starkweather, N. D., joined the naval service in December 1941. He was associated with the University of Pennsylvania Hospital, Philadelphia, as a specialist in dermatology and syphilology.

Lieutenant Breillatt lives at 1326 Nebraska Street, Vallejo, Calif.

Lieutenant Commander Bromberg, son of Mr. Sol Bromberg of Galveston, Texas, is a specialist in internal medicine. He interned at Robert Koch Hospital and the St. Louis City Hospital, St. Louis.

Lieutenant Commander Krehbiel, a specialist in pediatrics, entered the Navy in April 1942. He interned at Isolation Hospital and City Hospital, St. Louis. His wife, Ruth C. Krehbiel, lives at 3024 Clark Court, Topeka, Kan.

Lieutenant Commander Duncombe was associated with Moore Hospital, Brockton, Mass., and St. Luke's Hospital, Middleboro, Mass. His wife, Louise F. Duncombe, lives at 38 Winthrop Street, Brockton.

Lieutenant Duwel, personnel officer here, lives at 128 Lexington Avenue, New York.

Chief Pharmacist Harvill lives in San Francisco.

Lieutenant Commander Burr, whose wife lives at 6407 Peerlees Street, Houston, Texas, joined the Navy in March 1942. He is a specialist in urology and was associated with Memorial Hospital, St. Joseph's Hospital and Jefferson Davis Hospital, St. Louis.

Lieutenant Commander Schraer is a specialist in radiology. He entered the Navy in February 1942 and was associated with the Pennsylvania Hospital, Philadelphia, and the Delaware County Hospital, Drexel Hill, Pa.

METHOD OF SELECTING PREMEDICAL AND PREDENTAL STUDENTS FOR ENTRANCE IN THE MEDICAL AND DENTAL SCHOOLS

The Bureau of Naval Personnel of the Navy Department has announced that students shall be selected for medical or dental training in the V-12 Program on the basis of their potential professional ability and on their records through the end of their third premedical term. Selection shall be made as early as practicable in the fourth term of the applicant's premedical work with the two following exceptions:

(*a*) For the first such selection, men who have already advanced beyond their fourth term will be considered on the basis of their work through the last term completed.

(*b*) Former apprentice seamen V-1 and V-7 who were accepted by approved medical schools or accredited dental schools prior to July 1, 1943 will be assigned to the schools which accepted their applications without further review of their credentials by the Committee of Deans referred to.

For both medical and dental students there is to be a committee in each naval district composed of deans of the medical or dental schools, or their representatives, in the district and the district training officer as a consultant member, which shall be requested to prepare lists of premedical and predental students for consideration for medical training. The Bureau of Naval Personnel will assign students from these lists to fill available vacancies in approved and accredited dental and medical schools throughout the country on the following basis:

(*a*) In the case of a nationwide excess of qualified students, the same percentage of qualified students from the top of each list down is to be assigned to medical and dental training from each district.

(*b*) All men selected in accordance with the foregoing procedure who complete premedical work at the end of a given Navy V-12 term are to enter medical or dental school before men finishing their premedical or predental studies at the end of a later term.

(*c*) Men selected for medical or dental training are to be assigned to schools in their districts if possible without violating (*b*). If not possible to assign men to schools in their districts, they will be assigned to schools in the nearest districts that have vacancies.

(*d*) Men are to be assigned to the school of their choice if possible without violating (*b*) or (*c*).

SHIPS NAMED IN HONOR OF MEDICAL DEPARTMENT OFFICERS

The Bureau of Medicine and Surgery announced on August 23 that new naval vessels will be named in honor of the following medical officers:

J. Douglas Blackwood. Commander Blackwood (MC), U.S.N., was killed in action on Aug. 9, 1942 in the Solomon Islands.

Rall. Lieut. Richard R. Rall (MC), U.S.N., was killed at Pearl Harbor on Dec. 7, 1941.

Miles. Lieut. (jg) Samuel S. Miles (MC), U.S.N.R., was killed in the battle of the Solomon Islands while serving with the First Marine Division.

Bronstein. Lieut. (jg) Ben Richard Bronstein (MC), U.S.N.R., died as a result of the torpedoing of the U. S. S. *Jacob Jones* off Cape May, N. J.

Crowley. Lieut. Comdr. Thomas E. Crowley (DC), U.S.N., was killed at Pearl Harbor, Dec. 7, 1941.

O'Reilly. Lieut. Edward J. O'Reilly (DC), U.S.N., was killed in action in the Solomon Islands in 1942.

SIX NEW DISPENSARY HOSPITAL UNITS IN FLORIDA

Six new independent dispensary hospital units have been completed at six auxiliary airfields in Florida. According to the *Army and Navy Journal* each sickbay will contain ward facilities for 42 patients, including 4 beds for S. O. Q. The new units are under the control of Capt. Bertram Groesbeck Jr. (MC), U. S. Navy, whose headquarters are at the U. S. Naval Air Station, Pensacola. Each of these units will be provided with portable x-ray equipment, complete laboratory facilities, flight surgeons' instruments, dark room and examining room in addition to the usual medical, surgical and pharmacy facilities. Three medical and two dental officers will be assigned to each of these units, which will serve as independent units in liaison with the main dispensary and the School of Aviation Medicine.

OFFICER PERSONNEL STUDY IN THE BUREAU OF MEDICINE AND SURGERY

According to the *Army and Navy Journal* of August 21 a study of utilization of officer personnel in the Bureau of Medicine and Surgery was completed by the Navy Management Engineer's Office on August 13. The personnel study was the second survey to be taken by the management engineer, a similar canvass of the Bureau of Aeronautics having been completed recently. Other bureaus will be covered also. The study was confined to one hundred and twenty-four officers of rank of lieutenant commander and below and was designed to search out and indicate appropriate action in cases of misplacement, to discover what billets can be filled by enlisted men or WAVES, and to discover instances in which officers are not fully and appropriately occupied by their duties.

LIEUT. VICTOR S. FALK JR. RECEIVES SILVER STAR AWARD

Lieut. Victor S. Falk Jr. (MC), U. S. Navy, received the Silver Star Award for caring for wounded on Guadalcanal under fire and for traveling aboard a disabled plane the next day while he cared for patients being evacuated. The famed "Bat Out of Hell" squadron of marine dive bombers, of which Lieutenant Falk is a member, fought through the battle of Midway and the Guadalcanal campaign and were the first to bomb the Munda Japanese base. They furnished support for ground troops mopping up on the island and have returned to action in the Solomons with Major Claude J. Carlson of Seattle in command.

MISCELLANEOUS

THE DISTRIBUTING CENTER FOR PARASITOLOGIC SPECIMENS

During 1943 the greatly increased expansion in the teaching of tropical medicine in medical schools throughout this continent brought to light a critical scarcity of adequate parasitologic material for instructional purposes. Accordingly a committee formed by the American Association of Medical Colleges and the National Research Council together with other interested agencies conceived a plan whereby such material might be gathered in the field and also exchanged to mutual advantage among teaching institutions. For this purpose a distributing center for parasitologic specimens was established and the Division of Parasitology and Tropical Medicine at the Army Medical School was designated to carry out this plan. The center at the Army Medical School is coordinated with the one recently established at the Army Medical Museum for the collection and distribution of tissue specimens from cases of tropical diseases.

Between Jan. 1 and July 1, 1943 the distributing center supplied fifty-six army training centers and ninety-four hospitals, medical and graduate schools in the United States, Canada and Mexico with almost 24,000 specimens. This material consisted of 392 living cultures of protozoa, 1,573 vials of helminth ova and protozoan cysts, 17,775 malaria slides (chiefly supplied by the U. S. Public Health Service), 222 paraffin blocks of specimens of fixed tissues, 533 vials of entomologic specimens, 3,036 miscellaneous slides, including whole mounts, smears from cultures and sections, and 307 vials of adult helminths, scolices, segments and so on.

This material was received from fifty-five institutions including medical schools, zoology departments, army hospitals, the U. S. Public Health Service, various state public health services and other interested individuals. The list of generous contributing agencies follows:

UNIVERSITIES AND MEDICAL SCHOOLS

University of Alabama
University of Arkansas
Baylor University
University of California
University of California at Los Angeles
University of Chicago
Chicago Medical School
University of Colorado
Columbia University College of P. & S.
University of Connecticut
Cornell University
Duke University
Harvard University
Indiana University
Iowa State College
Johns Hopkins University
University of Louisiana
University of Michigan
University of Minnesota
University of Missouri
New York University
University of Pennsylvania
Queen's University
Rice Institute
University of Rochester
University of Southern California
University of Tennessee
University of Toronto
Tulane University
Washington University
Yale University

ARMY CAMPS AND STATIONS

Army Medical Museum, Washington, D. C.
Army Medical School, Washington, D. C.
Port Belvoir, Virginia
Greenville Army Flying School, Mississippi
Medical Dept. 2655
Puerto Rican Dept. Lab., P. R.
Fourth Service Command Laboratory

GENERAL HOSPITALS

Borden, Oklahoma
Letterman, California
McClosky, Texas
Percy Jones, Michigan
Walter Reed, Washington, D. C.

HEALTH DEPARTMENTS

Florida State Board of Health

OTHER SOURCES

Bureau of Animal Industry, U. S. D. A.
Bureau of Ent. & Plant Quarantine, U. S. D. A., Washington, D. C.
Bureau of Ent. & Plant Quarantine, U. S. D. A., Florida
Board of Health Lab., Ancon, C. Z.
International Hospital, Santo Domingo, R. D.
National Institute of Health, Bethesda, Md.
New York Public Health Service
U. S. Public Health Service, Columbia, S. C.
Rockefeller Foundation, Brazil
Rockefeller Foundation, Colombia
Rockefeller Foundation, Tallahassee, Fla.

Since the functioning of the center depends on a steady influx of such material, every institution is urged to continue sending in all parasitologic specimens which can be spared and which might prove valuable to another school. Both gross and microscopic specimens of parasitic worms and ova, arthropods of medical importance, protozoa, malaria and other blood parasites are particularly desired. Mailing containers, franked labels and shipping directions will be furnished on request. Shipments should be addressed to:

The Director
Army Medical School
Army Medical Center
Washington 12, D. C.

Att: Division of Parasitology and Tropical Medicine

Cooperation in responding to this appeal will make possible the continuation of this valuable service.

BLOOD DONOR SERVICE

A Statement on the Functions of the American Red Cross Blood Donor Service

Frequent requests are made to the American Red Cross to supply whole blood or blood plasma to individuals, to hospitals and to Army or Navy medical units in this country. The requests are based largely on misunderstandings of the functions of the Red Cross Blood Donor Service. In order to clear up these misunderstandings the following statement is issued with the approval of the Medical Services of the Army and Navy:

1. The Red Cross Blood Donor Service is the only agency through which the people of this country may give their blood to the Army and Navy for the production of dried plasma or serum albumin.

2. No facilities are provided for procuring whole blood from volunteer or paid donors for transfusions to be used either by the public or by Army and Navy medical personnel. The Red Cross Blood Donor Service is not a blood bank service.

3. All blood procured by the Red Cross Blood Donor Service is delivered immediately to processing laboratories, where it becomes the property of the Army or Navy. Most of the blood is processed into dried plasma or serum albumin to be used for the armed forces in foreign service or on naval vessels. Some of the blood, however, is processed into liquid plasma for use in military hospitals in this country. The Red Cross has no jurisdiction over the distribution of these blood substitutes and therefore cannot furnish them to any one.

4. The Medical Services of the Army and Navy have adequate supplies of liquid plasma for use in their hospitals in this country, which may be obtained by medical officers through regular channels as follows:

The source of supply for the Army has been set forth in an army circular letter which reads:

> Thawed blood plasma (liquid plasma) is available to all army station and general hospitals within the continental United States. Liquid plasma will be supplied by processing centers as follows:
>
> (*a*) Army Medical School, Washington, D. C., will supply the first, second and third service commands.
>
> (*b*) LaGarde General Hospital, New Orleans, will supply the fourth and fifth service commands.
>
> (*c*) Fitzsimons General Hospital, Denver, will supply the sixth, seventh and ninth service commands.
>
> (*d*) The Eighth Service Command Laboratory, Fort Sam Houston, Texas, will supply the eighth service command.

A supply of blood plasma for naval hospitals may be obtained by applying to the Commanding Officer, U. S. Naval Medical School, Naval Medical Center, Bethesda, Md.

5. All inquiries to the Red Cross from medical officers of the Army or Navy should be answered with the foregoing information.

6. All military units on foreign service or naval units on sea duty are being provided with adequate supplies of blood plasma or serum albumin as determined by the representatives of the Surgeon Generals.

7. The Army and Navy have agreed to use blood plasma obtained only through regular military channels.

G. CANBY ROBINSON, M.D.,
National Director,
Blood Donor Service.

August 23, 1943.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ARKANSAS

Dr. Hearn Resigns as Director of Industrial Hygiene.—Dr. Roberts A. Hearn, assigned by the U. S. Public Health Service as director of industrial hygiene, state board of health, has resigned to become medical director of the Indiana Division of the Republic Aviation Corporation, it is reported. His successor on the Arkansas board has not been named.

CALIFORNIA

Dr. Ballard Joins Industrial Department at Los Angeles.—Dr. Francis E. C. Ballard, San Francisco, medical officer of the state bureau of industrial health, has been placed in charge of the industrial hygiene division of the Los Angeles City Department of Health.

Fund for Prevention and Cure of Disease.—*Science* reports that the will of the late John H. Eagle, Philadelphia silk manufacturer who died last month, bequeaths his estate, estimated at $7,000,000 after a bequest of $1,000,000 to Mrs. Eagle, to the California Institute of Technology, Pasadena, and the Salvation Army. The fund for the institute will be used in the prevention and cure of disease and will be known as the John E. Eagle Endowment. It provides for prizes for distinguished service to humanity in the fields of chemistry, physics, medicine and other scientific endeavor.

Changes in Health Officers.—Dr. Clifford V. Mason, assistant superintendent of the Fairmont Hospital of Alameda County, San Leandro, has been appointed health officer of San Leandro and Alameda County to succeed Dr. Stanford F. Farnsworth, who resigned to become health officer of Oakland. ——Dr. Stanley E. Coffey was recently appointed health officer of the city of Orland, succeeding Dr. Thomas H. Brown; Dr. Zerah P. King was appointed health officer of the city of Sanger, succeeding Dr. Benjamin H. Viau; Carl W. Clark succeeds Dr. David C. Cleave as health officer of Belvedere; Dr. John L. Vaught was appointed health officer of Dos Palos, succeeding Dr. Paul A. Lum.

INDIANA

New Professor of Ophthalmology.—Dr. Robert J. Masters has been appointed professor and head of the department of ophthalmology at the Indiana University School of Medicine, Indianapolis. Dr. William F. Hughes, who has been chairman of the department since 1934, will continue teaching in the department. Dr. Masters graduated from Indiana in 1918 and is secretary of the Section on Ophthalmology of the American Medical Association.

KANSAS

School Physicians Named.—Dr. Dale D. Vermillion was elected president of the Goodland School Board, August 3. Dr. Arthur C. Gulick was recently elected a new member of the board. Dr. James A. Butin was elected vice president of the Chanute Board of Education, August 2.

Henry Asher Resigns from State Board.—Dr. Henry H. Asher, Topeka, has resigned as director of the division of local health of the Kansas State Board of Health to become health officer of Alger and Schoolcraft counties, Mich. Prior to his appointment with the Kansas board, Dr. Asher was health officer of Sedgwick County for two years.

Roster of Kansas Physicians.—The Kansas State Board of Health recently released a new roster of physicians in the state as a substitute for the usual release printed by the state board of medical registration and examination and which was not published this year. The booklet of eighty-five pages contains the list of members of the Kansas State Board of Medical Registration and Examination, the list of members of the Kansas State Board of Health, a foreword by Dr. Floyd C. Beelman, Topeka, secretary of the board of health, a copy of G. S. 65-1004a (the Kansas licensure law), a list of states with which Kansas has reciprocity, a list of the health officers in Kansas by counties and towns, and a list of the physicians in Kansas both by counties and alphabetically, giving the license number of each physician.

MASSACHUSETTS

The Brigham Bulletin.—In July the first issue of the *Brigham Bulletin* made its appearance under the editorship of Dr. Robert S. Myers, Boston. The bulletin is intended to be a medium between the Peter Bent Brigham Hospital, Boston, and members of its staff who are now in the armed forces.

The Warren Triennial Prize.—Competitive essays for the Warren Triennial Prize will be received until November 15. The prize was set up in a fund by the late Dr. J. Mason Warren in honor of his father, Dr. John C. Warren. The accumulated interest is awarded every three years to the best dissertation considered worthy of a premium on some subject in physiology, surgery or pathologic anatomy, the arbitrators being the general executive committee of the Massachusetts General Hospital.

African Fever Studied at Harvard.—Eight guinea pigs inoculated with a germ of African fever in the laboratories of the Firestone Tire and Rubber Company plantation in Liberia have been turned over to Dr. David Weinman, instructor in comparative pathology and tropical medicine, Harvard Medical School, Boston, for study of the fever to find an effective antidote or preventive. It was stated that the immediate purpose of the study of the fever is to check its effect on troops in Africa and to plan postwar experiments of African diseases, newspapers reported.

Portraits Presented to Massachusetts Hospital.—A portrait of the late Dr. Reginald H. Fitz executed by Margaret Fitzhugh Browne was unveiled by Mrs. Reginald Fitz, daughter-in-law of the physician, during special ceremonies in the medical staff room of the Massachusetts General Hospital. Mrs. Henry B. Bigelow unveiled a portrait of her father, the late Dr. Frederick Cheever Shattuck, the work of Mrs. David Linn Edsall. Mrs. Carol Lord Butler also unveiled a portrait of her father, the late Dr. Frederick Taylor Lord, also the work of Margaret Fitzhugh Browne. Dr. Nathaniel W. Faxon, medical director of the hospital, accepted the portraits for the hospital. The three portraits were the gift of an alumnus of the medical service who wishes to remain anonymous.

MICHIGAN

Dr. Whitehorn Lectures in Detroit.—Dr. John C. Whitehorn, Henry Phipps professor of psychiatry, Johns Hopkins University School of Medicine and psychiatrist in chief, Johns Hopkins Hospital, Baltimore, will address the Michigan Society of Neurology and Psychiatry on September 23. His subject will be "Individual Issues in Postmilitary Psychotherapy."

Medical Conference.—The department of postgraduate medicine at the University Hospital, Ann Arbor, announces a postgraduate medical conference, October 8. Subjects to be discussed include diabetic acidosis, diffuse vascular diseases, medical and surgical treatment of hypertension, management of chronic sinus disease, medical and surgical treatment of peptic ulcer, thymicolymphatic constitution, endometriosis and low back pain.

Two Bids Received for Mental Hygiene Clinic.—Newspaper reports, August 12, indicated that Escanaba and Marquette submitted the only bids for the establishment of an upper peninsula mental hygiene clinic, allowed by an act of the legislature this year. The state will contribute about $12,000 in professional salaries to the clinic, while the host county will be expected to provide about $3,000 worth of quarters, equipment and secretarial services.

Collection of Blood for Civilian Use.—The state department of health will sponsor a traveling clinic to begin about September 20 to collect blood plasma in Michigan cities to meet the needs of the state's civilian population, it was reported on August 24. The program will be financed out of $20,000 appropriated by the legislature. Communities which donate blood to the program will establish their own plasma reserve from which physicians may obtain free plasma for their patients.

Course in Electrocardiographic Diagnosis.—The department of postgraduate medicine of the University of Michigan Medical School, Ann Arbor, announces a postgraduate course in electrocardiographic diagnosis to be held November 8-13. Investigation consists of lectures, lantern slides and demonstrations as well as the examination under supervision of electrocardiograms from the files of the laboratory. There will be a fee of $50. Additional information may be obtained from the department of postgraduate medicine, University Hospital, Ann Arbor.

MISSOURI

Kansas City Fall Conference.—The twenty-first annual fall clinical conference of the Kansas City Southwest Clinical Society will be held at the Little Theater, Kansas City, October 4-6. Among the out of state speakers will be:

Dr. Harrison F. Flippin, Philadelphia, The Present Status of Sulfonamide Therapy.
Dr. Tom D. Spies, Birmingham, Ala., Common Unrecognized Vitamin Deficiencies.
Dr. Frank H. Lahey, Boston, Peptic Ulcer from the Standpoint of the Surgeon.
Dr. Edward H. Rynearson, Rochester, Minn., The Diagnosis and Treatment of Actual Endocrine Disturbances.
Dr. Cyrus C. Sturgis, Ann Arbor, Mich., A Discussion of the Commoner Types of Anemia.
Dr. Paul D. White, Boston, Newer Concepts Concerning the Course and Management of Coronary Heart Disease.
Dr. Charles Gordon Heyd, New York, Gallbladder Disease in Its Relation to Liver Function.
Dr. William F. Mengert, Iowa City, Prevention and Treatment of Toxemia of Pregnancy.

In addition there will be a round table discussion on "Tomorrow's Results of Today's Research." On Tuesday and Wednesday mornings a series of refresher courses will be held covering the various specialties. A military program has also been planned.

NEW YORK

Cancer Teaching Day.—On October 7 a cancer teaching day will be observed at the Homer Folks Tuberculosis Hospital, Oneonta, under the auspices of the Medical Society of the County of Otsego, the Sixth District Branch of the state medical society, the Tumor Clinic Association of the State of New York, the division of cancer control of the state department of health and the state medical society. Speakers will include Drs. Norman Treves, Hempstead, on "The Care of the Incurable Cancer Case"; Gray H. Twombly, New York, "Cancer of the Cervix," and Chevalier L. Jackson, Philadelphia, "Cancer of the Larynx, Bronchi and Esophagus." At the evening session Drs. Andrew H. Dowdy, Rochester, and George N. Scatchard, Buffalo, will discuss "Cancer of Face and Lip" and "X-Ray Aspects of Bronchogenic Carcinoma" respectively.

New York City

Hospital News.—Direction of all medical teaching in the New York Eye and Ear Infirmary was taken over by the Columbia University College of Physicians and Surgeons on July 1.

Faculty Changes at Long Island College.—Dr. Howard W. Potter, clinical professor of neurology and psychiatry, and Nicholas B. Dreyer, M.A., associate professor of pharmacology, have been granted full professorships at Long Island College of Medicine, Brooklyn. Dr. Dorothy Loomis has been named assistant professor of pathology; this appointment is said to be the first in the history of the medical school in which a woman has been named an assistant professor. Dr. Loomis has held the Van Cott Fellowship in pathology at the school since 1936 and has been an instructor since 1938.

Facial Reconstruction Clinics Urged for Civilians.—In discussing a new facial reconstruction program under army sponsorship, Nathaniel A. Olinger, D.D.S., in charge of the maxillofacial and surgical prosthesis department, School of Dental and Oral Surgery, Columbia University, advocated the immediate establishment of publicly supported clinics throughout the country to care for facial rehabilitation work. For the past six years Columbia University has been operating the only clinic of this kind, he said. New patients there are usually referred to psychiatrists, who try to restore their confidence.

NORTH CAROLINA

Changes in Health Officers.—Dr. Douglas H. Fryer, Leaksville, has resigned as the first full time health officer of Rockingham County to take over the city and county health activities in Bay City, Mich. He will be succeeded by Dr. Benjamin M. Drake, Carthage.——Dr. Phares Y. Greene, Graham, has resigned as health officer of Alamance County, effective August 1, to devote his full time to private practice.

Second Treatment Center for Venereal Disease Planned.—Arrangements are under way for the opening of a rapid treatment center in Durham, the second of its kind in the state (THE JOURNAL, August 7, p. 1024). Admissions are now being made at the first clinic in Charlotte, which will receive white and colored women only. Men will be admitted at Durham and those patients with treatment resistant gonorrhea. At Charlotte preference will be given patients who are prostitutes, transients or uncooperative or who for other reasons cannot be satisfactorily treated in local clinics. All admissions will be channeled through county health officers. Patients will be admitted from all sections of the state at no cost to them.

OKLAHOMA

Wards for Poliomyelitis.—Two wards of the University of Oklahoma School of Medicine Crippled Children's Hospital, Oklahoma City, have been set aside for the use of poliomyelitis patients. Dr. Charles M. Bielstein, formerly resident in pediatrics, University Hospitals, medical adviser of the Oklahoma Commission for Crippled Children, is working with Dr. Carroll M. Pounders and Dr. Don H. O'Donoghue, who are in direct charge of the poliomyelitis patients in the hospital.

Personal.—Donald B. McMullen, Sc.D., associate professor and head of the department of hygiene and public health and associate professor of bacteriology, University of Oklahoma School of Medicine, Oklahoma City, was selected by the committee on the teaching of tropical medicine of the Association of American Medical Colleges to go to Central America during the month of September to observe methods of tropical disease control. Dr. McMullen was to spend about three weeks at a United Fruit Company Hospital and at least a week with the local field unit of the Office of the Coordinator of Inter-American Affairs.——Dr. James D. Osborn, Frederick, has been appointed a member of the National Board of Medical Examiners for a term of six years.

PENNSYLVANIA

Dr. J. Moore Campbell Named Deputy State Secretary of Health.—Dr. John Moore Campbell Jr., former director of health conservation, has been appointed deputy state secretary of health in charge of medical affairs. Dr. Campbell has been a member of the state health department for many years. In 1911 he became pathologist in the state department's Philadelphia laboratory and three years later moved to Harrisburg to be in charge of communicable disease control work.

District Meeting.—The Second Councilor District of the Medical Society of the State of Pennsylvania held its annual meeting at the Berkshire Hotel, Reading, September 8. A feature of the meeting was the presentation of fifty year testimonial certificates to Drs. Harvey F. Scholl, Prospect Park; George C. Webster, Chester; Charles H. Schoff, Media, and George F. Seiberling, Allentown. The speakers on the program included:

Dr. George P. Muller, Philadelphia, Surgical Treatment of Bronchiectasis.
Dr. Robert L. Anderson, Pittsburgh, Our State Medical Society During Wartime.
Dr. Augustus S. Kech, Altoona, Is Medicine Drifting Toward a Socialistic System?
Dr. Walter F. Donaldson, Pittsburgh, Balancing Available Medical Service Between Armed Forces and Civilian Population.
Dr. Chauncey L. Palmer, Pittsburgh, Recent and Pending Health Legislation.

The county medical societies of Berks, Bucks, Chester, Delaware, Lehigh and Montgomery are included in the second district.

Philadelphia

Hospital Award for Staff Members.—Dr. Rudolph Winston recently received the first annual award as the outstanding member of the staff of Mercy Hospital. The award, consisting of a scroll, was established by the hospital staff to honor a member who in their estimation had been the most outstanding during the previous year. Dr. Winston was selected for the first award on the basis of the fact "that for the past two years he sacrificed his lucrative practice to give full time in study at the Graduate School of the University of Pennsylvania." According to Dr. Henry M. Minton, director of the hospital, it was felt that the sacrifice which he made in order to improve his medical knowledge, felt to be of great benefit to Mercy Hospital, was worthy of commendation and public approval.

Changes at Woman's Medical College.—New appointments to the faculty of Woman's Medical College of Pennsylvania include those of Dr. Calvin M. Smyth Jr. as clinical professor of surgery, Dr. Rubin M. Lewis, clinical assistant professor of surgery, and Dr. Miriam Bell, Mount Lebanon, Pa., clinical assistant professor of medicine. Promotions at the school include:

Roberta Hafkesbring, Ph.D., professor of physiology.
Dr. Eunice L. Stockwell, professor of ophthalmology.
Dr. William T. Lemmon, clinical professor of surgery.
E. Frances Stilwell, Ph.D., associate professor of anatomy.
Dr. Charles P. Bailey, clinical assistant professor of surgery.
Dr. Margaret DeRonde, clinical assistant professor of psychiatry.
Dr. Marjory K. Hardy, clinical assistant professor of dermatology.
Dr. Dorothea M. Killian, clinical assistant professor of therapeutics.
Dr. Marion West, clinical assistant professor of medicine.

TEXAS

Rockefeller Foundation Sponsors Lectures on Psychosomatic Medicine.—Dr. Jacob S. Kasanin, assistant clinical professor of psychiatry, University of California Medical School, San Francisco, recently lectured on psychosomatic medicine at the various U. S. Army hospitals of the Eighth Service Command, under the auspices of the Rockefeller Foundation.

Personal.—Dr. Edward H. Cary, Dallas, was recently chosen president of Group Hospital Service, Inc., of Texas to succeed the late J. H. Groseclose, D.D. Dr. Cary was formerly treasurer.——The Woman's Auxiliary to the Smith County Medical Society gave a dinner in honor of Dr. Albert Woldert on July 21, observing his fiftieth anniversary in the practice of medicine in Tyler.——Dr. Laurie Mackechney, Fort Worth, was appointed July 29 as superintendent of the Wichita Falls State Hospital, succeeding Dr. Barton W. Dorbandt.

Clinical Staff Named for Cancer Hospital.—According to the *Texas State Journal of Medicine* the board of regents of the University of Texas recently announced the appointment of the following Houston physicians, all of whom will serve without salary, as members of the clinical staff of the M. D. Anderson Hospital for Cancer Research: Drs. Judson L. Taylor, surgeon; John H. Foster, otolaryngologist; Everett L. Goar, ophthalmologist; Herbert T. Hayes, proctologist; Joseph B. Foster, orthopedic surgeon; Robert A. Johnston, obstetrician; Benjamin Weems Turner, urologist; James Greenwood, neurosurgeon; Culver M. Griswold, dermatologist; Moise D. Levy, physician; David Greer, pediatrician; Ernst W. Bertner, gynecologist, and Fred C. Elliott, D.D.S., stomatologist. Experimental work has been under way at the old Baker Home, 2310 Baldwin Avenue, Houston. New clinic buildings are now under construction on the site (THE JOURNAL, August 21, p. 1197).

GENERAL

Board of Pediatrics.—The American Board of Pediatrics will hold its written examination locally under a monitor, Feb. 4, 1944. The oral examination will be held in Philadelphia on March 25-26 and in San Francisco on May 6-7.

Fire Prevention Week.—The week starting October 3 has been designated by President Roosevelt as "Fire Prevention Week." In a statement to the press the President is reported to have said that the war program is menaced by an alarming increase in preventable fire losses. "These preventable fires," he said, "are being measured in thousands of workers killed and disabled; vast destruction of critical raw materials, food and other vital supplies for our armed forces and civilian population; the ruin of war plants, factories, homes and machinery —in many cases for the duration of the war."

Mrs. Milligan Named to Head Women's Field Army.—Mrs. Lucy R. Milligan, New York, formerly director of the women's division of the National Association of Manufacturers, has been appointed national commander of the Women's Field Army of the American Society for the Control of Cancer, 350 Madison Avenue, New York. Mrs. Milligan, who has been a member of the national advisory board of the Women's Field Army since its organization in 1935, is president of the National Council of Women. Dr. Florence Rena Sabin, Denver, who was recently elected a director of the American Society for the Control of Cancer, was chosen an honorary national commander of the Women's Field Army.

Accidental Deaths Increase.—A total of 3,991 accidental deaths for twenty-one reporting states was reported during the first six months of 1943. The National Safety Council states that this indicates only a 3 per cent increase despite increased employment and high speed production. Of the fourteen states showing increases the four recording increases of more than 50 per cent were Alabama, Arizona, Texas and Missouri. Increases ranged from 3 per cent in New York and Oregon to 78 per cent in Arizona. The largest decrease in accidental deaths for the half year period were reported by Illinois and North Carolina, both of which had checked accidental deaths 22 per cent over last year's record.

New Sustaining Members of Nutrition Foundation.—Abbotts Dairies of Philadelphia and the American Lecithin Company of New York have become sustaining members of the Nutrition Foundation, New York, and Mr. C. R. Lindback and Mr. Adrian D. Joyce, president and chairman respectively of the two groups, have become members of the board of trustees. In a release, August 31, the Nutrition Foundation stated that it is now receiving $237,000 annually from thirty-seven food and related manufacturers to support basic research in the science of nutrition. The foundation is supporting seventy basic studies in thirty-eight institutions in the United States and Canada. Grants-in-aid amounting to $302,840 have been paid to these institutions since the organization of the foundation, March 12, 1942.

Regional Meetings of Chest Physicians.—The Pennsylvania chapter of the American College of Chest Physicians will hold its annual meeting at the Bellevue-Stratford Hotel in connection with the meeting of the Pennsylvania State Medical Society in Philadelphia, October 6. The New York State chapter will hold its fall meeting at the Hotel Biltmore, New York, October 15, with the following speakers among others:

Dr. Chevalier L. Jackson, Philadelphia, A Simple Bronchopulmonary Nomenclature and Its Clinical Application.
Dr. Richard H. Overholt, Brookline, Mass., Experiences with Pulmonary Resections in Pulmonary Tuberculosis.
Brig. Gen. Shelley P. Marietta, assistant surgeon general, U. S. Army, Washington, D. C., Rehabilitation of Military Personnel as Carried Out in the Army.
Dr. George G. Ornstein, New York, Idiopathic Spontaneous Pneumothorax, Incidence and Pathogenesis.

Dr. J. Winthrop Peabody, Washington, D. C., president of the college, will be the guest speaker at a luncheon meeting. The Indiana chapter will hold its meeting in connection with the annual session of the Indiana State Medical Association at the Claypool Hotel, September 28. Herman E. Hilleboe, senior surgeon, U. S. Public Health Service, will speak on "Tuberculosis Control in Industry."

Resolution Urges Abolishment of Communion Cup.—Announcement has just been received of a resolution adopted by the National Tuberculosis Association at its annual meeting in May recommending that the governing heads of church organizations that use the common communion cup adopt some method of "administering the sacrament that is in conformity with our knowledge of good hygiene and public health practice." The resolution was adopted unanimously and submitted to Bishop Tucker of the Episcopal Church for presentation at its annual convention in October. The resolution follows:

WHEREAS, It is a well established fact that one case of tuberculosis comes from another; that the infectious agent, the tubercle bacillus, is contained in the sputum of those who have the disease and that this bacillus may be conveyed from mouth to mouth through the use of a common drinking cup;

WHEREAS, This menace to health has been recognized in most, if not all, of the states by legislation prohibiting the use of the common drinking cup, but notwithstanding certain church organizations continue to use the common communion cup in their services; therefore be it

Resolved, That the Board of Directors of the National Tuberculosis Association at the annual business meeting held in St. Louis, May 6, 1943, respectfully calls the attention of the governing heads of the church organizations that use the common communion cup to the danger of transmitting communicable diseases in this way and recommends that they adopt some method of administering the sacrament that is in conformity with our knowledge of good hygiene and public health practice.

B Complex Award.—Nominations are solicited for the 1944 award of $1,000 established by Mead Johnson and Company to promote researches dealing with the B complex vitamins. The recipient of this award will be chosen by a committee of judges of the American Institute of Nutrition. The award will be given to the laboratory (nonclinical) or clinical research worker in the United States or Canada who, in the opinion of the judges, has published during the previous calendar year January 1 to December 31 the most meritorious scientific report dealing with the field of the B complex vitamins. While the award will be given primarily for publication of specific papers, the judges are given considerable latitude in the exercise of their function. If in their judgment circumstances and justice so dictate, it may be recommended that the prize be divided between two or more persons. It may also be recommended that the award be made to a worker for valuable contributions over an extended period but not necessarily representative of a given year. Membership in the American Institute of Nutrition is not a requisite of eligibility for the award. To be considered by the committee of judges, nominations for this award for work published in 1943 must be received by the secretary, Arthur H. Smith, Ph.D., Wayne University College of Medicine, Detroit, by Jan. 10, 1944. The nominations should be accompanied by such data relative to the nominee and his research as will facilitate the task of the committee of judges in its consideration of the nomination.

CANADA

Honored for Study of Medical Care.—*Science* reports that Dr. Alfred Hardisty Sellers, medical statistician, department of health, Toronto, squadron leader, Royal Canadian Air Force, has been awarded the Professional Institute Medal of the Professional Institute of the Civil Service of Canada in recognition of the important contribution made by him in the study of hospital statistics in Ontario in connection with the cost of medical care.

LATIN AMERICA

Inter-American Congress of Radiology.—The first Inter-American Congress of Radiology will be held in Buenos Aires, October 17-22, under the auspices of the Argentine Society of Radiology (Sociedad Argentina de Radiología). A tentative program includes the following speakers:

Drs. Sabino DiRienzo, Cordoba, Argentina, and Dr. Luis Opázo, Chile, X-Ray Diagnosis of Spinal Injections.

Drs. Carlos Butler, Montevideo, Uruguay, Leonardo Guzmán, Chile, and Dr. Nelson Carvalho, Brazil, Cancer of the Breasts: Treatment and Results.

Drs. Pedro A. Maissa, Argentina, and Gonzalo Gômez, Colombia, Roentgen Diagnosis of the Gastrointestinal Tract: Inflammation of the Jejunum, Dr. Maissa, and Inflammation of the Colon, Dr. Gómez.

Dr. Oscar Soto, Peru, The Teaching of Radiology in America.

Dr. Quirno Codas Thompson, Paraguay, will present an exhibition of roentgenograms on stenosis of the duodenum and Dr. Cassio M. Vilaça, Brazil, a similar exhibition on stomach ulcer. Dr. José F. Merlo Gómez is president of the Argentine Society of Radiology.

Health Activities in Latin America.—A mobile dispensary for workers of the Pan American Highway has been provided. The first unit was placed in operation during June under the direction of Dr. Carlos Portillo and has been serving chiefly the area around Choluteca. Eventually three mobile units will be necessary for the entire highway in Honduras. The highway enters Honduras near the town of Goascoran and passes from there through Nacaome, Jicaro Galan, Choluteca and San Marcos de Colon, leaving Honduras to enter Nicaragua shortly after passing through this last town. The work of construction is being carried on by North Americans and Hondurans under the direction of various construction agencies.

Society News.—Dr. Ruy Rolim was recently elected president of the Brazilian Society of Ophthalmology. Other officers are Drs. Paiva Goncalves and Jonas Arruda, vice presidents, Lincoln Caire, secretary, and Jose Alves Ferreira, treasurer. At the annual meeting of the Medical Association of San Juan, P. R., recently Drs. José A. Sein and Guillermo Ruiz-Cestero were elected president and secretary, respectively, for the ensuing year.

Hospital News.—The eleven story Hospital Militar Central was recently opened in Buenos Aires. It has a large capacity and modern equipment in the different departments of all branches of modern medicine.

Scholarships.—Reader's Digest has awarded three scholarships for study on the Kenny method in poliomyelitis in the University of Minnesota to Miss H. Rodriguez Brizuela, Miss J. E. Stella and Dr. Julio R. Calcamari. The scholarships were awarded through the Department of Public Health of Argentina and the Instituto Cultural Argentino.

Personal.—Dr. Bernardo A. Houssay, head of the Instituto de Fisiologia of Buenos Aires, has been made a member of the Royal Medical Society of London. Dr. Jose de Filippi has been awarded the 1942 prize of the Academia Argentina de Cirugia for his article on "Surgery on Heart Infarct"; the prize is given annually. Dr. Rogelio E. Carratal of Buenos Aires was recently appointed honorary member of the Academia Latino-Americana de Neurologia Psiquiatria y Medicina Legal of Brazil.

Disease Control.—The discovery of 460 cases of yaws in Guapi, Colombia, launched the idea for a campaign against the disease. A drive on malaria is also under way.

Social Security and Public Welfare Program Proposed.—At the first National Congress on Public Welfare in Mexico City recently Dr. Gustavo Baz, secretary of public welfare, stressed the importance of raising medical standards in the republic by the careful selection of students and adequate facilities for study and research. He also recommended greater specialization among graduates of medical schools and announced that the department of public welfare was studying plans for a medical center in Mexico City with facilities for specialized research and practice in certain diseases. Dr. Baz stated that the objectives of the program would include the modernization of existing hospitals and construction of new hospitals throughout Mexico, making medical care available to small communities now lacking such services, the control of malnutrition, and the award of scholarships and fellowships to medical students and doctors. In the field of child and medical care Dr. Rodriquez Cabo proposed a unified child welfare code to coordinate existing child welfare laws, organization of a Central Technical Council to draw up a child welfare plan on a national scale, complete maternity care, wider instruction in dietetics and providing needy children with free milk and meals. She also recommended a national drive to make the country more conscious of child welfare problems and needs. Dr. Juan Comas urged the congress to adopt measures necessary to meet the specialized needs of Mexico's Indians. Resolutions approved by the congress include coordination of public welfare services federally administered, through an amendment to the federal constitution, if possible; creation of facilities for substantiating need for welfare services and keeping pertinent records; planning of antepartum care to reduce infant mortality rate; creation of a central medical committee, as part of the department of public welfare, and establishment of suburban and rural medical centers to instruct mothers and prospective mothers in child care and antepartum care; an active campaign against tuberculosis; creation of visiting nursing and obstetric services, and pediatric and child welfare instruction to midwives and nurses attached to the department of public welfare.

FOREIGN

Clinics for New Zealand.—The New Zealand government plans to establish health clinics in regions where groups of physicians are willing to operate such service, it was announced by Health Minister Arthur M. Nordmeyer, in the New York *Times*, July 1. It was stated that a salaried state medical service would be established if doctors wish to operate on that basis. Sixty-seven refugee doctors have received permits to enter the country and thirty-one are now practicing in New Zealand. It was reported that the government also proposes to establish a home nursing service and domestic aid service at the first opportunity.

Health and Sanitation in Vichy.—A shortage of medical supplies in Vichy, France, are indicated in statements to the press, August 4. Castor oil, bismuth, horse serum, quinine and absorbent cotton are not available; bandages are mere improvisations, layers of absorbent paper supplanting the usual cotton. Several hundred thousand units of insulin donated by the United States in November 1942 served to lessen the critical need of the 30,000 diabetic persons in France. The increase in tuberculosis is attributed to the presence of the disease in repatriated prisoners, who, in view of inadequate hospital facilities, are left in their homes, thereby infecting their families. Lack of soap is a factor in the spread of certain diseases. Sheets in hotels are rinsed only in cold water and allowed to dry; irons are not used because of need for fuel economy. At the Edward Heriot Hospital in Lyons it was decided to use mutton tallow as a substitute for grease; after more than two months' delay because of red tape it was delivered to the hospital in the form of a "huge lump of dirty crude suet." Hospitals through necessity must refuse admittance to all but the most critically ill; even fracture patients are reluctantly accepted because limited food resources do not meet the length of stay of the average fracture patient. The Swiss people have been caring for many of the undernourished children who have been able to take advantage of their offer of summer vacations.

CORRECTION

Toxic Eruption Due to Amphetamine Sulfate.—In the summary of the article with this title by Kauvar, Henschel and Ravin in THE JOURNAL, August 14, page 1073, it was stated in the summary that "an atopic dermatitis eruption resulted from the ingestion of amphetamine sulfate and its analogue dextroamphetamine sulfate." This sentence should have read "an atopic dermatitis-like eruption resulted from the ingestion of amphetamine sulfate and its analogue dextroamphetamine sulfate."

Government Services

Dr. Heller Named in Charge of Division of Venereal Diseases

John R. Heller Jr., P. A. Surgeon, with the States Relations Division, U. S. Public Health Service, Washington, D. C., since April 1941, has been assigned in charge of the division of venereal diseases in the Office of the Surgeon General. He succeeds Dr. Raymond A. Vonderlehr, who has been named director of district number 6 of the public health service covering Puerto Rico and the Virgin Islands (THE JOURNAL, August 14, p. 1138).

Foreign Letters

LONDON

(From Our Regular Correspondent)

July 22, 1943.

Centenary of the Fellowship of the Royal College of Surgeons

The centenary of the foundation of the fellowship of the Royal College of Surgeons has been celebrated by a reception given by the president and the council. The distinguished company included ambassadors of the allied nations, members of the government and many foreign surgeons whom the war has brought to our shores. The award of the honorary fellowship to the following foreign surgeons was announced: Sir Hugh Devine, Melbourne; Prof. A. T. A. Jurasz, Poland; Prof. N. Burdenko, chief surgeon of the Soviet army; Prof. S. S. Yudin, Moscow; Col. E. C. Cutler, Harvard; Prof. W. G. Penfield, McGill; Prof. E. A. Graham, St. Louis; Prof. R. B. Osgood, Harvard; Prof. N. S. Shenstone, Toronto; Prof. N. Mahfouz Pasha, Cairo; Prof. I. W. Brebner, Witwatersrand. Admitted to honorary fellowship at the reception were Col. J. M. Holst, Norwegian army; Col. J. A. Macfarlane, consulting surgeon to the Canadian army; Prof. H. C. Naffziger, San Francisco.

In his address the president, Sir Alfred Webb-Johnson, said that the amenities of the college had been destroyed by the enemy and they were grateful for the great hall of Lincoln's Inn being placed at their disposal. He then turned to "praise famous men and our fathers that begot us." Of such were John of Arderne, Thomas Morstedo, Wiseman, Vicary, Ranby, Cheselden, Pott, Abernethy, Astley Cooper, Bell, Hilton and Paget. Towering above all were John Hunter, the founder of scientific surgery, and the immortal Lister. Benjamin Brodie founded the fellowship, and the by-laws governing it were so well laid that they needed little revision during the hundred years. Referring to the prime minister, Winston Churchill, on whom the honorary fellowship had recently been conferred, he said that when the history of our time comes to be written he will be judged worthy of the tribute paid to Lister by the American ambassador, Mr. Bayard: "It is not a profession, it is not a nation, it is humanity itself which, with uncovered head, salutes you."

A message was received from the king as visitor of the college. He sent congratulations and expressed satisfaction on the conferring of the honorary fellowship on distinguished surgeons from the dominions and allied countries. He trusted that the plans for the restoration of the unique museum will be carried out soon after the war. In his reply the president assured the king that the fellows will be untiring in their efforts to restore the museum, toward which they have received the most generous promises of help from all parts of the empire. The steps already taken to restore this greatest museum of anatomy and pathology in the world have been described in previous letters. Some of the losses due to bombing are irreparable.

War Troubles of the British Medical Journal

In the annual report of the council of the British Medical Association it is stated that the *Journal* has continued to appear regularly though the difficulties of production and distribution increase as the war goes on. Paper is severely rationed, and because the main part of each weekly issue of nearly forty-five thousand copies has to be sent to members, whose numbers are steadily growing, it is impossible to make any substantial economy by cutting the circulation. The only way to eke out the ration is to use paper of less weight, to cut down advertisements and text and to print in smaller ranges of type. All these methods have been adopted and little more can be done except to trim the paper margins. The varied needs of the profession in wartime cannot be covered adequately in a journal with a large obligatory circulation by much less than half its peacetime number of pages. This seems to be understood by members, who have noticed other newspapers and periodicals shrinking in size year by year and employing every device to save paper and get more print on a page. It is perhaps less well realized that the number of articles submitted to the *Journal* is now as large as before the war and that the inflow of weekly correspondence has surpassed all previous experience. The task of selection is therefore harder and more invidious than ever. Meanwhile the Ministry of National Service has drawn away experienced workers from the editorial and business departments and from the printing works, and further staffing difficulties must be expected. The most that the council can promise is that everything possible will be done to produce a journal which maintains its place among the leading medical periodicals of the world and promotes the profession's war effort.

Food Changes Due to the War

Dehydrated cheese, mixed with potato flour and compressed into blocks, was among the new forms of food mentioned by Sir John Bodinnar, commercial secretary to the Ministry of Food, in describing the saving of precious shipping space by "putting food into battle dress." Last year we saved 41 million cubic feet of space by importing boned, molded and telescoped carcasses of meat, 22½ million cubic feet by importing dried instead of shell eggs, 1 million cubic feet by importing milk powder instead of canned condensed milk. These figures represent a saving of 750,000 ship tons. Other developments were a more compact form of importing bacon from the United States by using bales instead of wooden boxes, and using chests made of jute fiber instead of plywood for importing tea.

This season for the first time peas are being dehydrated. They keep well and are less bulky than canned peas and therefore more economical to transport. When water is added they appear like freshly gathered peas. Like dehydrated cheese, their production so far is earmarked for the fighting forces. So also are dehydrated potatoes prepared by a new process. All these new methods of treating foods have been introduced as part of the war effort but have considerable postwar possibilities.

Streptococcic Myositis

Gas gangrene is regarded as due to anaerobic spore bearing bacilli, which infect and destroy muscle. The war wounds in the Middle East have brought to light a rare condition, streptococcic infection of muscle in wounds, which has to be distinguished from ordinary gas gangrene as the treatment is quite different. Attention to this condition is drawn in the *Army Medical Department Bulletin* for June. From the autumn of 1941 to the autumn of 1942, not including the second battle of El Alamein, 19 cases were observed. The distinction of streptococcic myositis from ordinary gas gangrene rests on the following points: 1. Cutaneous erythema is usually well defined and there is more discoloration of skin than of muscle; in gas gangrene the opposite generally holds. 2. The discolored muscle is of coppery color but does not have the boiled and coagulated appearance of typical gas gangrene; further, the muscle is alive and will react to stimuli. 3. The smell is neither so pungent nor so sweet as in gas gangrene. 4. Films of muscle stained by Gram's method show many streptococci and pus cells. In gas gangrene a few cocci may be found among the bacilli associated with clostridial gas gangrene; but the picture in streptococcic

myositis is quite different in that the streptococci are either present alone or in much greater numbers than any other organisms. The anaerobic streptococci appeared to be an essential factor, but the accompanying organisms determined the exact clinical picture. These were found in every case, most often either ordinary aerobic Streptococcus pyogenes or Staphylococcus pyogenes. The Streptococcus pyogenes infections were the most acute, and cutaneous erythema was a prominent feature. The Staphylococcus pyogenes infections were somewhat insidious, and a white boggy edema was often found. Five of the 19 patients died from a progressive toxemia, sometimes accompanied by streptococcic septicemia.

The essentials of successful treatment are large doses of sulfonamides locally and by mouth, combined with conservative surgery, such as skin incisions and exposure of the affected muscle. Bad results have followed more radical treatment. Hence the great importance of distinguishing the condition from ordinary gas gangrene.

A Charter for Midwives

The concern felt at the falling birth rate has directed attention to the importance of skilled service in childbirth. There is a shortage of midwives. A Midwives Salaries Committee, appointed by the Ministry of Health, has presented its report, which recommends that national scales of salary shall apply to certified midwives employed in hospitals, maternity homes or domiciliary service. Important proposals are also made as to uniform, accommodation, hours of duty, holidays with pay and sick pay. At present midwives deliver two thirds of the 600,000 babies born in England and Wales and act as maternity nurses under a doctor's direction at most of the remaining cases. Legislation during the present century has placed midwifery on a sound professional basis and has done much to improve the status of the midwife. Notwithstanding this the midwife has no protected uniform of her own. The provision of a national uniform would contribute to her public standing. On the whole the prospects of midwifery as a profession compare unfavorably with those of nursing. For some years there has been a shortage of midwives, and this has been aggravated by the war creating a vastly increased demand for nurses, which has caused many midwives also qualified as nurses to take up this occupation. The committee recommended national scales of increased salaries which have been accepted. A pupil midwife will receive a salary of $200 for the first year, $225 for the second year and until she has passed her first examination, and $300 after she has passed until she has completed her training. A trained midwife will receive a salary which with emoluments will be worth $1,050 and will rise annually by increments of $25 to $1,250. The higher positions of superintendent midwife, assistant matron and matron will receive more, culminating in $2,750.

Vitaminized Chocolate for Freed Europe

There is less chocolate for the public because a large part of the manufacturers have gone over to making vitaminized chocolate for distribution in Europe when freed. It will be specially for children from 7 to 14 years of age. It is being made in bars of 1 ounce weight which will provide the greater part of the day's requirements of vitamins A, B_1, C and D. Their efficacy has already been proved in Malta. When Dr. J. C. Drummond, scientific adviser to the Ministry of Food, visited Malta after its resistance to siege and bombing he found the nutrition of the children such that he recommended that supplies of vitaminized chocolate be sent. During the war many experiments have been made to discover the best medium for vitamin. Biscuits, sweets and spreads of all kinds have been tried, and chocolate has been found the best for providing vitamins in a palatable and acceptable form. Vitaminized chocolate will not be on sale here, but the War Office has ordered large quantities.

BUENOS AIRES

(From Our Regular Correspondent)

July 25, 1943.

Attempt at Antiplague Vaccination with Living Bacteria

An outbreak of sylvatic plague appeared in Cordoba in the fall of 1940. Rodents were found to play an important part in the spread of the epidemic, which up to now has not been entirely controlled. Well organized brigades appointed by the National Department of Hygiene are carrying on an active campaign against plague. Dr. J. K. Goobar vaccinated 30 persons of both sexes against plague (29 adults and a child aged 8 years). He used a vaccine of the Girard type, the same as that which was tried in Java and Madagascar. The vaccine used in Java and Madagascar did not cause any accidents, whereas both morbidity and mortality from plague were greatly diminished. The vaccine is prepared with a strain of Pasteurella pestis which was isolated by Girard from a patient with ganglional plague in Madagascar. The virulence of the strain was attenuated by successive passages in nutrient agar at 22 C. A suspension of the living attenuated strain in isotonic solution of sodium chloride with a concentration of 1 billion bacteria for each cubic centimeter of the suspension was prepared and maintained at a constant temperature above 4 C. and administered at a dose of 1 cc. for adults and 0.5 cc. for the child. The vaccine was well tolerated and followed by a mild local reaction with mild fever and, in some cases, mild axillary adenopathy. The president of the Provincial Department of Hygiene ordered the appropriate provincial and medical authorities to undertake a mass vaccination on the persons living in the endemic districts in the near future.

Conference on Tuberculosis in Peru

The first National Conference of Tuberculosis was recently held in Lima, Peru. Dr. M. Espinoza Galarza, the president of the Peruvian Society of Phthisiology, presided. Topics discussed were indexes of infection, morbidity and mortality of tuberculosis in different regions of Peru, social factors involved in the development of the disease, clinical forms of tuberculosis in patients in dispensaries and hospitals, and surgery in pulmonary tuberculosis.

The incidence of infection was discussed in fourteen articles which were prepared with the reports of observation of 170,000 persons. The average index of tuberculous infection was 60 per cent for adults of either sex and 53 per cent for children from birth to the age of 16 years. The partial indexes of the three geographic zones of Peru are similar, which shows that the Peruvian population is in a progressive and massive stage of the infection. There was an index of from 3 to 5 per cent of active tuberculosis in apparently normal persons. An average index of tuberculosis mortality could not be determined on account of local difficulties in obtaining the data. One can conclude from the reports of the three geographic zones of the country that the various factors of nutrition, housing, local crowding of the population, salary, migration of the people and the local condition of hygiene and sanitation in the different zones are the causes of the degree of tuberculization in the country. The attention of the Peruvian phthisiologists was directed to the advisability of accepting the classification of the clinical forms of pulmonary tuberculosis presented by the members of the chair of phthisiology of the Faculty of Medicine of Lima. Resolutions were adopted (1) to establish a general board in charge of the national antituberculosis crusade with autonomic authority for the necessary technic and administrative steps, (2) to organize centers for carrying on national x-ray photographic and tuberculin censuses for an early diagnosis of tuberculosis, (3) to ask the proper authorities to

increase construction of hygienic and inexpensive houses using the fund which has been built up by the workers and employees, (4) to consider alcoholism a social scourge and a factor of importance in the development of tuberculosis, (5) to prepare some laws for improving both the quality and the quantity of milk, for controlling the sanitary conditions of stables and for supervising the health of cows, (6) to increase the functions of antituberculosis organizations for protecting children and the number of nutritional centers and antituberculosis hospitals, clinics and dispensaries, (7) to establish maternity hospitals for tuberculous mothers and nurseries for their children, (8) to increase the number of beds available for tuberculous patients in hospitals, (9) to establish the use of record books to be presented for the patients when medical care and medicine from dispensaries are wanted, (10) to create new postgraduate courses of specialization in antituberculosis medical and surgical fields and to improve those which are already functioning, (11) to create an institute for phthisiologic researches, improving social work and giving dental care to those in need of it, (12) to ask for laws through which parents who abandon their children shall face punishment for social delinquency, (13) to improve the personnel concerned with the preparation of tuberculosis statistics, (14) to establish an insurance against tuberculosis, as it was advised to do it in the 1940 national antituberculosis week, and (15) to obtain the philanthropic, economic and moral aid of the people.

Reticuloendothelial System in Malaria

Drs. M. A. Maldonado and J. R. Monasterio recently lectured before the Society of Legal Medicine and Psychiatrics of La Plata. They were mainly concerned with the role of the reticuloendothelial system in the result of malariotherapy. Malaria stimulates a reaction of defense of the reticuloendothelial system, which is shown by the appearance of monocytosis and the results of the congo red test and other similar tests. The results of malaria therapy depend on the degree of reticuloendothelial reaction. The authors carried on observations on several patients in the course of malariotherapy. They believe that the modifications of the blood constitution, the microscopic changes of Kupffer's cells and the microglial reaction on the one hand and the results of the red congo test and other similar tests allow one to evaluate the degree of defensive reticuloendothelial reaction in malariotherapy. They also discussed the possibilities of therapeutic application of the reticuloendothelial reaction in other diseases, such as leprosy and leukemia.

Cancer Mortality in Buenos Aires

Dr. Angel H. Roffo, head of the Instituto de Medicina Experimental para el Estudio y Tratamiento del Cáncer, recently published statistics on mortality from cancer in Buenos Aires in relation to morbidity. There were 4,084 deaths from cancer in 1941, which represents 162.80 for each hundred thousand persons in the city. Cancer of the respiratory tract increased from 148 cases in 1926 to 742 in 1941. Dr. Roffo believes that the increase depends on the atmospheric changes due to exhaust gases from cars and smoke from industrial plants. Cancer is more frequent in parts of the body exposed to the sun than in those which are protected by clothing. The highest figures are those for cancer of the nose (37.43); those for cancer of the forearm were 0.25.

New Hospital

The 750 bed Juan A. Fernández Hospital was recently opened in Buenos Aires at a cost of 4,000,000 Argentine pesos. There are sixteen operating wards. It is air conditioned. Portable microphones and amplifiers are available. There are several halls with a room accommodating 200 persons waiting for consultation.

Tuberculosis in Uruguay

Dr. Armando Sarno is head of the Servicio de Lucha y Preservación Antituberculosa of Uruguay. X-ray examinations of the thorax were carried out on 134,209 persons in Montevideo. Tuberculous shadows were seen in 13.4 per cent of the films. The frequency of tuberculosis in various districts of the city varied between 8 and 20.9 per cent. There are several antituberculosis centers, hospitals, clinics and colonies for tuberculous patients in the country, yet the distribution is uneven. Dr. Sarno believes that in Montevideo no less than 3,000 beds for tuberculous patients should be available.

Congress of Industrial Physicians

The convention of industrial physicians which was organized by the Instituto Argentino de Seguridad took place recently at the headquarters of the Liga Argentina contra la Tuberculosis. The topics discussed were brucellosis, prevention of brucellosis, dermatosis in oil workers, importance of dermatology in industrial medicine, hypodermotrichosis, dermatitis caused by carrot juice and by pancreatic enzymes, heart diseases in relation to selection of workers and mercurialism.

Personals

Dr. Ramón Carrillo was recently appointed to the chair of neurosurgery at the Faculty of Medicine of the University of Buenos Aires to fill the vacancy left by Dr. M. Balado, who died.——Dr. Charles E. Oberling of the Public Health Service of New York recently visited Buenos Aires.——Dr. Rogelio Carratalá was recently appointed president of the chapter of legal medicine of the Academia Latino-Americana de Neurología, a member of the same academy in Brazil and a member of the American Council for Research on Problems of Alcohol.

Brief Items

The first Inter-American Congress of Roentgenology will be held in Buenos Aires during one of the last two weeks of October. The headquarters of the Committee on Organization is Calle Alsina 3317, Buenos Aires, Argentina.

Marriages

Ransom Russell Buchholz, Georgetown, Texas to Miss Virginia Barrere of Nashville, Tenn., at Columbia, S. C., August 2.

Henry Baker Perry Jr., Baltimore to Miss Lillie A. Brown of High Point, N. C., at Boone, N. C., August 6.

Max K. Moulder, Nashville, Tenn., to Miss Marcella Grace Castle of Kansas City, Mo., at Dallas, Texas, June 27.

Charles Gordon Smith III, Rocky Mount, N. C., to Miss Ethel Mervyn Jarvis at Lansdown, England, July 17.

Julius Katz, Grafton, Ill., to Miss Kathryn Kuhn of Fort Wayne, Ind., at Columbus, Ohio, August 11.

Richard Culler Horger, Eutawville, S. C., to Miss Mary Elizabeth Smith in Greenwood recently.

Brodie C. Nalle Jr., Charlotte, N. C., to Miss Carolyn J. Woolley in Maplewood, N. J., June 26.

Horace Milton Dalton, Norton, Va., to Miss Lalla Lee Laffitte of Estill, S. C., August 10.

Lenore Virgie Lee Patrick to Mr. Everett Chipman, both of Williamstown, Ky., August 21.

Charles L. Tinker to Mrs. Mary B. Sharp, both of New Philadelphia, Ohio, August 12.

Jean Todd Stoops, Wabash, Ind., to Miss Margaret E. Mobberley of Cincinnati, June 26.

Frank Smith Lovingood, Maryville, Tenn., to Miss Martha Ijams at Knoxville, July 17.

Ellis D. Parker, Laurel, Miss., to Miss Antoinette Marie Rivard of Detroit, July 18.

Thomas J. McDonnell, Sterling, Ill., to Miss Eileen O'Donnell of Chicago, August 7.

Deaths

Aleš F. Hrdlička, noted anthropologist, died at his home in Washington, D. C., September 5, of heart disease.

Dr. Hrdlička was born in Humpolec, Bohemia, March 30, 1869. He graduated at the Eclectic Medical College of the City of New York in 1892 and the New York Homeopathic Medical College and Hospital in 1894. Subsequently he carried on surveys among the insane and other classes and made anthropologic expeditions to many countries.

In the interim of his service as associate in anthropology at the New York State Pathological Institute from 1896 to 1899, Dr. Hrdlička spent a year in the study of anthropology at the medical school and the school of anthropology at the Sorbonne in Paris. In 1903 he was appointed assistant curator of the division of physical anthropology at the National Museum of the Smithsonian Institution in Washington. From 1910 to his retirement in 1942 Dr. Hrdlička was curator.

Many awards went to Dr. Hrdlička during his career. Among his activities were his service as secretary of the committee on anthropology for the National Research Council, 1917-1918. He was a life member of the American Academy of Arts and Sciences. In 1925-1926 he served as president of the American Anthropology Association and during 1928-1929 as president of the Washington Academy of Sciences. He was founder, president and life member of the American Association of Physical Anthropology and corresponding member of many European anthropologic societies. In 1927 he was Huxley medal lecturer in London on anthropology and related subjects.

Dr. Hrdlička had written extensively on his specialty. He was the founder of the *American Journal of Physical Anthropology,* serving as editor at the time of his death.

John Lincoln Rothrock ✠ St. Paul; University of Pennsylvania Department of Medicine, Philadelphia, 1888; professor emeritus of obstetrics and gynecology at the University of Minnesota Medical School, Minneapolis, where he had been clinical instructor in pathology, clinical instructor in pathology and gynecology, assistant professor of gynecology, associate professor of obstetrics and gynecology and professor; formerly professor of obstetrics and gynecology at the University of Minnesota Graduate School; specialist certified by the American Board of Obstetrics and Gynecology, Inc.; member of the House of Delegates of the American Medical Association in 1921, from 1923 through 1926 and in 1928; member of the Central Association of Obstetricians and Gynecologists; a founder and fellow of the American College of Surgeons; assistant health commissioner in St. Paul from 1896 to 1899; author of "Ten Years of Obstetrics and Gynecology in Private Practice," 1933; received the doctor of science from Gettysburg College in 1934; for many years on the staffs of St. Joseph's Hospital, St. Luke's Hospital, Bethesda Hospital and the Ancker hospitals; from 1921 to 1931 chief of the department of obstetrics and gynecology at the Wilder Dispensary and the Charles T. Miller Hospital, where he died, July 5, of periarteritis nodosa and acute atrophy of the liver, aged 79.

Morrow Duncan Brown ✠ Denver; Northwestern University Medical School, Chicago, 1900; member of the American Academy of Ophthalmology and Otolaryngology and the American Laryngological, Rhinological and Otological Society; major in the medical reserve corps of the U. S. Army not on active duty and served with the same rank during World War I; on the staffs of the Childrens, Mercy, Presbyterian, St. Joseph's and St. Anthony hospitals, Denver, and the Evangelical Lutheran Sanitarium, Wheat Ridge, Colo., and the Porter Sanitarium and Hospital; at one time physician for the Denver and Rio Grande Railroad; aged 65; died, July 1, of coronary disease.

Stephen Hulbert Ackerman ✠ Major, U. S. Army, retired, Hollis, N. Y.; Columbia University College of Physicians and Surgeons, New York, 1911; served during World War I; entered the medical corps of the U. S. Army as a captain in July 1920; retired in October 1928; under a special act was retired as a major in June 1930; formerly medical superintendent of the Fordham Hospital, New York; superintendent of the Coney Island Hospital, Brooklyn; at one time associated with the U. S. Veterans Bureau, Washington, D. C.; aged 57; died in the Brooklyn Hospital, July 2, of pituitary adenoma.

Reed Brinsmade Bontecou, Clifton Springs, N. Y.; College of Physicians and Surgeons, New York, 1889; member of the Medical Society of the State of New York; at one time secretary of the Rensselaer County Medical Society; served in the medical corps of the U. S. Army during World War I; formerly on the staff of the Marshall Sanitarium, Troy; at one time associated with the U. S. Veterans Bureau, later known as the Veterans Administration, in Boston and the U. S. Veterans Bureau in Springfield, Mass.; aged 78; died, June 18, of cerebral hemorrhage.

Rufus Eldridge Applewhite, Winnsboro, La.; Memphis (Tenn.) Hospital Medical College, 1913; member of the Louisiana State Medical Society; formerly secretary of the Franklin Parish Medical Society; served during World War I; director of the Franklin Parish Health Unit and acting director of the Concordia Parish Health Unit; aged 55; died, May 3, in the Winnsboro Sanitarium of coronary occlusion.

Clarence John Bell, Wellfleet, Mass.; College of Physicians and Surgeons, Baltimore, 1902; member of the Massachusetts Medical Society; chairman of the board of health; for many years a member of the school board; trustee of the Wellfleet Savings Bank; acting assistant surgeon, U. S. Public Health Service; on the staff of the Cape Cod Hospital, Hyannis; aged 66; died, June 6, of angina pectoris.

Frank W. Braley, Saranac, Mich.; Detroit College of Medicine, 1897; member of the Michigan State Medical Society; formerly president of the school board and health officer; aged 81; died, June 15, in the Blodgett Memorial Hospital, Grand Rapids, of arteriosclerosis.

Laura Jane Brown, Glendale, Calif.; Hahnemann Medical College and Hospital, Chicago, 1903; aged 78; died July 1, of carcinoma.

William A. Bryant, Antonito, Colo.; Kansas City (Mo.) College of Medicine and Surgery, 1921; member of the Colorado State Medical Society; on the staff of the Community Hospital, Alamosa; aged 51; died, May 31, in St. Joseph's Hospital, Denver, of congestive heart disease.

Viola May Coe, Portland, Ore.; Woman's Medical College, Chicago, 1890; aged 80; died, May 27, of cerebral hemorrhage and heart disease.

Ernest Lee Collins, Tyro, Miss. (licensed in Mississippi in 1911); member of the Mississippi State Medical Association; aged 67; died, June 13, of cerebral hemorrhage.

William M. Copenhaver Jr., ✠ Helena, Mont.; University of Minnesota Medical School, Minneapolis, 1932; diplomate of the National Board of Medical Examiners; formerly city health officer; served on the staffs of St. Peter's, St. John and Shodair Crippled Children's hospitals; aged 37; died, May 23, as the result of an automobile accident in November 1941.

John Christian De Fries, Thawville, Ill.; Rush Medical College, Chicago, 1894; member of the Illinois State Medical Society; aged 81; died recently of coronary heart disease and arteriosclerosis.

John Wesley Ferman, Emlenton, Pa.; Jefferson Medical College of Philadelphia, 1904; aged 63; died, June 18, of cerebral hemorrhage.

Samuel Isaac Fine ✠ New York; Long Island College Hospital, Brooklyn, 1915; member of the staffs of the Bronx and Lincoln hospitals; aged 54; died, June 24, of myocarditis.

Cary Breckinridge Gamble Jr., ✠ Baltimore; University of Maryland School of Medicine, Baltimore, 1887; formerly professor of medicine at his alma mater; served in France during World War I; formerly medical referee for several insurance companies; aged 80; a member of the staff of the Union Memorial Hospital, where he died, June 1, of arteriosclerotic heart disease and chronic bronchitis.

Henry Larkin Green ✠ Shreveport, La.; University of Pennsylvania School of Medicine, Philadelphia, 1914; medical examiner for the draft board; on the staff of the Tri-State Hospital; aged 63; died, June 22, of coronary occlusion.

J. Glenn Hemington, Uniontown, Pa.; Cleveland Homeopathic Medical College, 1901; member of the Medical Society of the State of Pennsylvania; formerly medical director of Fayette County; aged 69; died, May 22, in the Uniontown Hospital of cerebral hemorrhage.

Wiley Calvin Kennedy, Talmo, Ga.; Atlanta Medical College, 1894; member of the Medical Association of Georgia; aged 71; died, May 20, of heart disease.

Edward J. Konop, Sawyer, Wis.; Marquette University School of Medicine, Milwaukee, 1924; served during World War I; recently resigned as an examiner for the Selective Service System; aged 48; died in Sturgeon Bay, June 17, of acute yellow atrophy of the liver.

Ruth Almina Kreitz ✠ Cambridge Springs, Pa.; Woman's Medical College of Pennsylvania, Philadelphia, 1933; school medical inspector; member of the board of the Crawford

County Tuberculosis Society; member of the staff of the Meadville City Hospital; aged 34; died, June 15, of myocardial failure and chronic glomerulonephritis.

John Milton Luther, New Florence, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1908; served on the staffs of the Passavant Hospital, Pittsburgh, and the Lee Homeopathic Hospital, Johnstown; aged 63; died, June 14, of coronary thrombosis.

Reginald E. Macdonald, Virginia City, Nev.; California Medical College, Oakland, 1885; aged 81; died, June 13, in the Washoe County General Hospital, Reno, of myocarditis.

Donald R. MacLeod, Wichita, Kan.; Kansas City (Mo.) Homeopathic Medical College, 1899; aged 68; died, June 15, of carcinoma of the spinal cord.

William John Nicholson, Centerville, Ala.; Vanderbilt University School of Medicine, Nashville, Tenn., 1884; member of the Medical Association of the State of Alabama; president of the Bibb County Medical Society in 1887; served as probate judge of Bibb County for many years; aged 82; died, June 18, of cerebral hemorrhage.

Henry Clyde O'Roark, Portsmouth, Ohio; University of Louisville (Ky.) School of Medicine, 1926; member of the Ohio State Medical Association; served during World War I; on the staff of the Mercy Hospital; a member of the Portsmouth Rotary Club; aged 45; died, July 9, in the Veterans Administration Facility, Bay Pines, Fla.

Charles Oliver Rainey, Camilla, Ga.; Atlanta School of Medicine, 1910; member of the Medical Association of Georgia; served as president of the Georgia Public Health Association; county health commissioner; aged 59; died, May 14, of cerebral hemorrhage.

Alice Mary Ridge, Ogden, Utah; University of Michigan Homeopathic Medical School, Ann Arbor, 1909; member of the Utah State Medical Association; on the staff of the Thomas D. Dee Memorial Hospital; aged 66; died, June 9, of carcinoma of the pancreas.

George Jacob Rubelman, Tecumseh, Neb.; Rush Medical College, Chicago, 1880; member of the Nebraska State Medical Association; served as mayor of Tecumseh, county coroner, city physician, physician for the insanity commission and as a member of the school board; aged 89; died, June 2, of mitral insufficiency.

John Francis Sabbia, Brooklyn; Fordham University School of Medicine, New York, 1918; member of the staffs of the Kings County, Shore Road and Victory Memorial hospitals; aged 47; died, June 19, of coronary thrombosis.

Sylvester Wright Saunders, San Diego, Calif.; American Medical College, St. Louis, 1877; aged 91; died, June 22, of senility.

Josiah P. Saye, Ball Ground, Ga.; University of Georgia Medical Department, Augusta, 1883; aged 83; died, May 21, of a fractured hip received in a fall.

Walter Gustav Adolph Schulte ✠ Salt Lake City; University of Colorado School of Medicine, Denver, 1907; member of the House of Delegates of the American Medical Association in 1934; member of the American Urological Association; fellow of the American College of Surgeons; specialist certified by the American Board of Urology, Inc.; on the staff of the Holy Cross Hospital; aged 64; died, June 8, of coronary occlusion.

Alonzo Covert Smith ✠ Wooster, Ohio; University of Michigan Medical School, Ann Arbor, 1915; a charter member of the Rotary Club; past president of the Wayne County Medical Society; president and chief surgeon at the Kinney Memorial Emergency Hospital; aged 55; died, July 10, of coronary thrombosis.

Simon Harris Smith ✠ Atlanta, Ga.; Emory University School of Medicine, Atlanta, 1928; aged 41; served on the staffs of the Georgia Baptist Hospital, Piedmont Hospital and the Emory University Hospital, where he died, June 3, of Hodgkin's disease.

Harry Clifford Stillwell ✠ Rahway, N. J.; Jefferson Medical College of Philadelphia, 1925; specialist certified by the American Board of Radiology, Inc.; medical examiner for the public schools of Rahway; formerly city physician; president of the staff of the Rahway Hospital; aged 40; died, June 15, in Macon, Ga., of a self-inflicted bullet wound.

Eugene Finch Talbott, Grinnell, Iowa; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1895; member of the Iowa State Medical Society; fellow of the American College of Surgeons; served on the staff of St. Francis Hospital; aged 69; died, June 24, of coronary thrombosis at his summer home near Jenkins, Minn.

William De Alton Towsley, Syracuse, N. Y.; University of the City of New York Medical Department, 1881; member of the Medical Society of the State of New York; at one time coroner of Oswego County; member of the staff of the Crouse-Irving Hospital; aged 86; died in the Marcy Hospital, June 9, of arteriosclerotic heart disease.

John Cox Wall, Eastman, Ga.; Atlanta College of Physicians and Surgeons, 1907; member of the Medical Association of Georgia and formerly councilor of the Third District; member of the Southeastern Surgical Congress and the American College of Chest Physicians; fellow of the American College of Physicians; also a pharmacist; owner of the Clinic Hospital; aged 60; died, May 18, of heart disease.

CAPT. ELPHEGE A. M. GENDREAU
1888-1943, M. C., U. S. NAVY

Harry Hugh Wilson, Norman, Okla.; Fort Worth School of Medicine, Medical Department of Fort Worth University, 1896; formerly medical superintendent of the Western Oklahoma Tuberculosis Sanatorium, Clinton; aged 76; died, June 4, in a hospital at McLester of pneumonia.

William Townes Wimbish ✠ Petersburg, Va.; University of Virginia Department of Medicine, Charlottesville, 1896; aged 68; for many years on the staff of the Central State Hospital, where he died, June 4, of arteriosclerotic heart disease.

Isaac Dix Winston, Sturgis, Ky.; University of Nashville (Tenn.) Medical Department, 1900; member of the Kentucky State Medical Association; formerly local surgeon to the Illinois Central Railroad Company; a director of the Farmers State Bank; aged 69; died, June 25.

Charles B. Woodley, Kinston, N. C.; Bellevue Hospital Medical College, New York, 1886; aged 82; on the staff of the Memorial General Hospital, where he died, June 19, of myocarditis.

Willis George Youens, Columbus, Texas; University of Texas School of Medicine, Galveston, 1907; served in the medical corps of the U. S. Army during World War I; health officer of Colorado County for many years; formerly camp physician for the Civilian Conservation Corps stationed at Phoenix, Ariz.; for many years local surgeon for the Southern Pacific Railroad; aged 59; died recently of coronary thrombosis.

KILLED IN ACTION

Elphege Alfred Mailliot Gendreau ✠ Medical Director, Captain, U. S. Navy, Washington, D. C.; Georgetown University School of Medicine, Washington, 1914; Navy Medical School, 1916; commissioned a lieutenant, junior grade, in the medical corps of the U. S. Navy in April 1916, with a previous service of eight months in the medical reserve corps; advanced through the various grades to that of captain in August 1939; had served aboard the U. S. ships *Sacramento, Boreas, West Virginia, Glacier, Charleston* and the *Relief*; served in the Philippine Islands and in Haiti with the Public Health Service, and at many naval stations including the Naval Medical School, Washington, D. C., Receiving Station, San Francisco, Receiving Station, Hampton Roads, Va., and the Navy Yards at New York and Norfolk, Va.; fleet surgeon on the staff of the Commander-in-Chief, Pacific Fleet, since June 1941; fellow of the American College of Surgeons; held the Mexican Service Medal, the Victory Medal with Atlantic Fleet Clasp, the Navy Expeditionary Medal, 1931, and a decoration from Haiti; the Bureau of Medicine and Surgery named Gendreau Circle on the reservation of the new U. S. Naval Hospital, Dublin, Ga., in honor of his memory; was killed in action in the South Pacific, July 21, aged 55.

Bureau of Investigation

MISBRANDED PRODUCTS

Abstracts of Notices of Judgment Issued by the Food and Drug Administration of the Federal Security Agency

[EDITORIAL NOTE.—These Notices of Judgment are issued under the Food, Drug and Cosmetic Act and in cases in which they refer to drugs and devices they are designated D. D. N. J. and foods, F. N. J. The abstracts that follow are given in the briefest possible form: (1) the name of the product, (2) the name of the manufacturer, shipper or consigner, (3) the date of shipment, (4) the composition, (5) the type of nostrum, (6) the reason for the charge of misbranding and (7) the date of issuance of the Notice of Judgment—which is considerably later than the date of the seizure of the product and somewhat later than the conclusion of the case by the Food and Drug Administration.]

A. B. D. G. Capsules Improved (Later repackaged in part and labeled "Hain Abedege Improved Vitamins").—International Vitamin Corporation, Brooklyn. Shipped July 11, 1941. Adulterated and misbranded because, though represented to contain 200 U. S. P. units of vitamin B_1 per capsule, it contained not more than 133 such units per capsule. Misbranded for the same reason. Also adulterated and misbranded under the provisions of the law applicable to foods, as reported in F. N. J. 3221.—[*D. D. N. J., F. D. C. 566; November 1942.*]

Acetandyne Pain Tablets.—W. B. Goebel, trading as Botanical Medicine Company, Kannapolis, N. C. Shipped between June 7 and 10, 1940. Composition: not more than 0.99 grain of acetanilid and not less than 2.79 grains of aspirin per tablet. Adulterated because their strength differed from or their quality fell below the representation that each tablet contained 2 grains of acetanilid and 1 grain of aspirin. Also misbranded for this reason and because label failed to bear adequate warnings against unsafe dosage or methods or duration of administration necessary for protection of users and because wording on label "Pain Tablets . . . pains caused by menstrual disturbances . . . menstrual pains" was false and misleading in representing the product to be efficacious in treating pains caused by menstrual disturbances, whereas they were not.—[*D. D. N. J., F. D. C. 426; September 1942.*]

Adiron.—Lawrence Laboratories, Chicago. Shipped between Feb. 5 and March 7, 1941. Composition: each tablet contained an iron compound equivalent to approximately 0.7 grain of metallic iron and 67 U. S. P. units of vitamin A. Adulterated because its strength differed from, and quality fell below, that which it was represented to possess, namely, 1,200 U. S. P. XI units of vitamin A per tablet. Misbranded because of label misrepresentations of vitamin strength and false claim, "This core is the concentrate of the vitamins, equivalent in vitamins 'A' and 'D' to one-half teaspoonful of fresh U. S. P. Standard cod liver oil." Also misbranded because of false and misleading label representations that the product would be efficacious in treating nutritional (secondary) anemia, make new blood and improve and maintain the health. Further misbranded and adulterated under the law applicable to foods as reported in F. N. J. 2986.—[*D. D. N. J., F. D. C. 567; November 1942.*]

Cravex.—Plant Products Company, Inc., Burbank, Calif. Shipped Feb. 21, 1941. Composition: essentially calcium and manganese compounds, including phosphates, with caffeine and milk sugar. Misbranded because labeling did not give proper directions for use, since those that the package did bear were not adequate for the treatment of alcoholism, for which the product was advertised. Further misbranded because labeling was false and misleading since the name "Cravex" was interpreted to mean treatment for craving for alcohol, whereas the preparation did not constitute adequate treatment for that condition.—[*D. D. N. J., F. D. C. 559; November 1942.*]

Crawford's Formula 53 with Vitamin E.—Walter Bopp, Eagle Rock, Calif., and Crawford Foods, Inc., Los Angeles. Shipped July 18, 1940. Composition: tablets containing plant materials, largely alfalfa (lucerne) leaf and stem tissues with smaller amounts of other plant materials including tomato seed, anise, fennel, capsicum, celery seed, a leafy material such as parsley, and yeast. Misbranded because falsely represented in labeling to be efficacious in building blood, supplying the necessary vitamins and minerals to the blood stream, for restoring normal functions of the body mechanism; maintaining tone of sacral nervous system, helping preserve the sex power and high vitality through building up the entire glandular system; benefiting cases of pale and livid complexion, dry skin, discolored gums, transparent and waxy ears, habitually cold feet, decaying teeth, pyorrhea and some other things, besides relieving arthritis, heart disease, degenerative disorders and bladder, liver and kidney troubles.—[*D. D. N. J., F. D. C. 441; September 1942.*]

DPS Formula No. 54.—Dartell Laboratories, Los Angeles. Shipped between July 7 and Aug. 20, 1941. Adulterated because its strength differed from, and quality fell below, that which it was represented to possess, namely, "1000 International Units of vitamin A, 700 U. S. P. XI units of vitamin D and 100 International Units of vitamin C." Also misbranded for that reason and because of misrepresentations on label that product would be useful in treating hyperacidity, nervousness, low blood calcium, moist type skin disorders, pregnancy, lactation, soft teeth and bones, respiratory disorders, asthma, sinusitis and tuberculosis. Also adulterated and misbranded under provisions of law applicable to foods, as reported in F. N. J. 2988.—[*D. D. N. J., F. D. C. 568; November 1942.*]

Germania Herb Tea.—Germania Tea Company, Minneapolis, and Consolidated Drug Trade Products, Inc., Chicago. Shipped between Jan. 15 and 22, 1941. Composition: senna leaves, about 40 per cent, and smaller proportions of other leaves, buds, seeds, stems and flowers, including arnica flowers, uva ursi leaves, anise seed and cyanus flowers. Misbranded because directions in accompanying booklet to drink this tea with meals as needed for a few weeks were not appropriate for an article of its composition and hence inadequate; because aforesaid booklet and a separate leaflet represented that use of the tea would give the consumer a normal, healthy and beautiful figure and that the product would be effective for relieving many bodily aches and pains, would give regular elimination for a healthy stomach, would be efficacious for stomach heartburns, sour stomach, vomiting, loss of appetite and restless nights, among many other conditions. Further misbranded because label did not give the common or usual name of each active ingredient or indicate which of the plant materials that it mentioned are physiologically or therapeutically active.—[*D. D. N. J., F. D. C. 442; September 1942.*]

Gid Granules—No. 1 and No. 2.—Eberly-Williams Manufacturing Company, Chicago. Shipped between April 9 and 17, 1941. Composition: "No. 1"—essentially the mucilaginous part of psyllium seed with karaya gum, sodium bicarbonate in proportions varying from 1.2 per cent to 8.2 per cent, calcium carbonate in proportions varying from 0.79 per cent to 9.2 per cent, a phosphate, a sulfate and sugar; "No. 2"—essentially the mucilaginous part of psyllium seed, with karaya gum, yeast and sugar. The No. 1 was misbranded because label falsely claimed that 9 per cent of the product was calcium carbonate and another 9 per cent was sodium bicarbonate; that the mixture was "scientifically prepared" so as to be of value in treating minor irritations of the stomach and upper intestines. The No. 2 was declared misbranded because of false label claims for its alleged value in treating inflammations of the lower intestine and spastic constipation. Both products misbranded because represented in accompanying circular as efficacious for relieving distressing symptoms in many cases of stomach disorders, headache, sleeplessness, colitis and liver and gall deficiencies not due to infection.—[*D. D. N. J., F. D. C. 443; September 1942.*]

Gly-Cas.—Gly-Cas Medicine Company, Muncie, Ind. Shipped Nov. 25, 1940. Composition: capsules each containing about 4.3 grains of plant material, including aloe, with a small amount of glycerin. Misbranded because label failed to warn sufficiently against unsafe dosage or methods or duration of administration, such as are necessary for protecting the users, or to caution the purchaser that continual or frequent use of the product might result in dependence on laxatives to move the bowels. Further misbranded because label falsely represented it as efficacious in treating muscular aches and pains, poor digestion, night risings, dizzy spells, nervousness, "loss of pep and energy" and some other conditions. Also misbranded because accompanying circular falsely claimed that "Gly-Cas" contained no harmful drugs, whereas the government contended that it was capable of causing harm. Misbranded finally because represented to have been on the market for twenty-five years or more, whereas it was essentially a preparation of aloes, a drug whose properties had been known for centuries, and because the label statement "Compound of cinnamon, aloe, glycerin and licorice" did not indicate what was really the active ingredient.—[*D. D. N. J., F. D. C. 444; September 1942.*]

Shores Special Formula Tablets.—Shores Company, Inc., Cedar Rapids, Iowa. Shipped between Dec. 12, 1939, and April 14, 1940. These tablets were sold under three separate designations, "C. T.," "C. C. T" and "S. C. Pink." Tablets in each group adulterated and misbranded in that their strength differed from, or quality fell below, that which they purported to possess: namely, C. T. was represented to contain 10 grains each of calcined magnesia and bismuth subnitrate whereas the actual amounts were respectively not more than 8.86 and 8.48 grains; each C. C. T. tablet was represented to contain kamala and extract of kamala equivalent to 9 grains of kamala and to contain ¼ grain of nicotine, whereas the correct figures were respectively 5.81 grains of kamala and only 0.21 grain of nicotine; the S. C. Pink tablets purported to contain 1 grain of calcium iodized per tablet, whereas the actual amount was not less than 1.93 grains.—[*D. D. N. J., F. D. C. 565; November 1942.*]

Williams Formulas (Regular and Strengthened).—Williams S. L. K. Laboratories, Milwaukee. Shipped July 26, 1940. Composition: "Regular"—essentially Rochelle salt (21.5 grains per fluid ounce), methenamine (5.2 grains per fluid ounce), iron and ammonium citrate (2.4 grains per fluid ounce), alcohol (3 per cent), water and extracts of plant drugs, including a laxative one, with nux vomica and capsicum; "Strengthened"—essentially the same as the "Regular," except that the first three ingredients named were given respectively as 40.2 grains, 9.3 grains and 3.8 grains per fluid ounce, and the alcohol was given as 2.3 per cent. Misbranded because label directions were too general and hence unsuitable for articles of such composition, in that they left too much to the user's judgment. Further misbranded because labels failed to warn sufficiently against unsafe dosage, in that they did not caution the user that frequent or continued use of the article might result in dependence on laxatives. Misbranded further because label of the "Regular" form represented that the product would provide iron for the blood and an alkalizer for excess stomach acid, would be efficacious in treating constipation, dizzy attacks, nausea and some other things and would help to bring the user to a greater enjoyment of life, and that the "Strengthened" form was an iron source.—[*D. D. N. J., F. D. C. 454; September 1942.*]

DANGEROUS TO HEALTH

Because of Inadequate Warnings on Labels

[EDITORIAL NOTE.—These abstracts differ from other abstracts of Notices of Judgment issued by the Food and Drug Administration of the Federal Security Agency which have appeared in these pages in that they deal with nostrums which were misbranded because their labels failed to carry adequate warnings against giving them to children or using them in those pathologic conditions in which they might be dangerous to health, or caution against unsafe dosages or methods or duration of administration or application, for the protection of the user. The abstracts that follow are given in the briefest possible form: (1) the name of the product; (2) the name of the manufacturer, shipper or consigner; (3) the date of shipment; (4) the composition; (5) the type of nostrum; (6) the reason for the charge of misbranding, and (7) the date of issuance of the Notice of Judgment—which is considerably later than the date of the seizure of the product and somewhat later than the conclusion of the case by the Food and Drug Administration.]

Floracubes.—Eugene H. Hunter, trading as Floracube Company, Los Angeles. Shipped March 9, 1940. Composition (claimed): "Floracubes . . . contain per average dose (1-6 box) less than 2 grains each of calcium carbonate, sodium bicarbonate, chlorides, podophyllum, magnesium, phenolphthalein, oil of juniper, boron, buchu, sodium benzoate, cascara, iron and dextrin. Also mineral oil and jelly, agar and celluloses, sugar, artificial color and flavor, combined with free oxygen, hydrogen and Ultra Violet. The above ingredients are combined with water under a special process to change their form and action to meet the requirements of Floracubes. . . . (Additional ingredients present, less 1 Gr.) Manganese, aloin, nitrates florides, sassafras, sulphates, calcium and silica." Misbranded because foregoing claims gave false impression that the product "derived its physiological activity in important respects by reason of its lubrication, bulk, alkaline and germicidal qualities; that it was nonirritating in action and might safely be used over a long period of time; and that it contained the ingredients listed in significant amounts and that these ingredients were combined with water under a special process which changed their form and action; whereas it derived its physiological activity practically, if not entirely, from the ingredient phenolphthalein, which is irritating; it was not germicidal, and could not be used over a long period of time without risk of injury; and it did not contain the ingredients listed in significant amounts, since it contained no appreciable amount, if any, of the ingredients iron, boron, manganese, fluoride, sodium bicarbonate, calcium as calcium carbonate, or sodium benzoate, and the ingredients were not combined with water under a special process which changed their form and action." Also misbranded because label did not give name and place of business of manufacturer, packer or distributor, or an accurate statement of the quantity of the contents prominently placed thereon. Further misbranded because fabricated from two or more ingredients and these were not listed under their common names on the label, which likewise did not indicate that phenolphthalein was the only important active ingredient. Finally, it was misbranded because label failed to give adequate directions for use and caution against giving it to children or using it in those pathologic conditions wherein it might be dangerous to health, or to warn against unsafe dosage or methods or duration of administration, for protection of users, since labels did not inform purchasers that employment of this treatment in cases of abdominal pain, nausea, vomiting or other symptoms of appendicitis might result in serious injury and that frequent or continued use might cause dependence on a laxative.—[*D. D. N. J., F. D. C. 552; November 1942.*]

Heads-Up Headache Powders.—Smith Brothers Drug Company, Greensboro, N. C. Shipped Dec. 10, 1940. Composition: the average powder contained 4.68 grains of aspirin, 6.62 grains of sodium bromide and 0.57 grain of phenolphthalein. Adulterated because strength differed from that represented, since each powder contained materially more of the several ingredients than amounts declared on label. Misbranded for the same reason and because of false and misleading label representations that use of this product would enable one to brace up or "go smiling thru' " when suffering from any of the various disorders mentioned on label. Misbranded further because label claim, "contains no acetanilid, harmful or habit forming drugs," was false and misleading, since the mixture might cause potentially harmful effects and was not essentially different from or safer than various other products on the market, or safe under all conditions, and actually did contain potentially harmful and habit forming drugs. Misbranded, also, because the term "Acidum Acetylsalicylic" is not the common name for aspirin and because label did not give adequate directions for use. Finally, misbranded because label did not adequately warn against use in those conditions wherein it might be dangerous to health or caution the user that it should not be taken when symptoms of appendicitis, such as nausea, vomiting or abdominal pain, were present, or that frequent or continued use might result in dependence on laxatives. —[*D. D. N. J., F. D. C. 446; September 1942.*]

Mackenzie Cold and Grippe Tablets.—C. E. Jamieson and Company, Detroit. Repackaged by Guy, Inc., Seattle. Shipped March 19, 1941. Composition: essentially acetanilid (0.94 grain per tablet), caffeine, aloin, atropine sulfate and capsicum. Misbranded because labeling failed to warn sufficiently against use by children or in those pathologic conditions wherein it might be dangerous to health, such as cases involving nausea, vomiting, abdominal pain or other symptoms of appendicitis, and to caution against unsafe dosage or methods or duration of administration, for protection of users, since frequent or continued use of this acetanilid-containing product might cause serious blood disturbances, anemia or collapse and its use might result in dependence on a laxative. Further misbranded because label recommendation as a treatment for a feverish condition, coryza, hay fever, rhinitis, influenza and some other things was false and misleading because it was not an adequate treatment for those conditions. Misbranded also because each tablet did not contain 2 grains of acetanilid as claimed.—[*D. D. N. J., F. D. C. 553; November 1942.*]

Picricine.—C. F. Breitenbach (Mucine Company), Chicago. Composition: essentially picric acid and eucalyptus oil incorporated in wool wax (lanum). Misbranded because label failed to bear name and place of business of manufacturer, packer or distributor, since designation "Ainsworth Specialty Co., Kansas City, Mo.," did not make clear this concern's connection with the product. Further misbranded because label did not give the common or usual names of active ingredients or the quantity of each. Also misbranded because labeling failed to warn against use by children, or in those pathologic conditions in which its employment might be dangerous to health, or caution against unsafe dosage or methods or duration of administration, for protection of user.—[*D. D. N. J., F. D. C. 436; September 1942.*]

Rogers Headache Soda.—Rogers Drug Company, Memphis, Tenn. Shipped Nov. 7, 1940, and Feb. 4, 1941. Composition: chiefly acetanilid, and not soda as name suggested. Misbranded because of false label statement that each powder contained 2½ grains of acetanilid, whereas the amount of this drug was not more than 1.9 grains per tablet. Further misbranded because label did not bear adequate directions for taking and sufficient warning against use by children, or in those pathologic conditions wherein it might be dangerous to health, or caution against unsafe dosage or methods or duration of administration, for protection of users. —[*D. D. N. J., F. D. C. 453; September 1942.*]

Sunshine Brand Powders.—Lavoine Drug Company, Worcester, Mass. Shipped Oct. 5, 1940. Composition: acetanilid only ingredient reported. Adulterated because each powder purported to contain 2 grains of this substance, whereas the actual amount was approximately 3.158 grains. Misbranded because of absence of label warning against unsafe dosage or methods or duration of administration in a manner necessary for protection of users, since frequent or continued use might cause serious blood disturbances, anemia or collapse. Further misbranded because potentially dangerous if administered to children, though label did not so warn. Also misbranded because package did not bear a label giving accurate statement of quantity of contents in terms of weight or numerical count.—[*D. D. N. J., F. D. C. 551; November 1942.*]

Council on Medical Education and Hospitals

INTERN TRAINING FOR JUNIOR AND SENIOR MEDICAL STUDENTS

Hospitals approved for intern training will not lose their approved status if they accept for internships medical students who are now in the junior or senior classes at the following medical schools:

Bowman Gray School of Medicine, Winston-Salen, N. C.
University of Utah School of Medicine, Salt Lake City.
Medical School of Southwestern Medical Foundation, Dallas, Texas.

Bowman Gray and Utah have long been approved schools of basic medical sciences. Recently they have expanded into four year schools. Bowman Gray now has junior and senior classes in session, and Utah will soon start a senior class. Both these schools will be visited by representatives of the Council in the near future to consider transfer of these schools from the list of approved schools in the basic sciences to the list of approved four year medical schools.

The Council has ruled that, on graduation, present juniors and seniors at the Medical School of Southwestern Medical Foundation shall be considered as if they had graduated from an approved medical school. This school will also be visited by the Council's representatives before the end of the year to consider possible full approval of the entire four year program. Should the school be included on the Council's approved list, the work of all students in good standing at the school at the time of the visit will be fully accredited.

In the meantime it is entirely satisfactory for approved hospitals to accept interns from these schools. Graduates of schools now on the approved list will in no way injure their records by accepting internships in such hospitals.

VICTOR JOHNSON, M.D., Secretary.

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

NATIONAL BOARD OF MEDICAL EXAMINERS EXAMINING BOARDS IN SPECIALTIES

Examinations of the National Board of Medical Examiners and Examining Boards in Specialties were published in THE JOURNAL, Sept. 11, page 114.

BOARDS OF MEDICAL EXAMINERS

ALABAMA: Montgomery, June 20-22. Sec., Dr. B. F. Austin, 519 Dexter Ave., Montgomery.

ARIZONA: * Phoenix, Oct. 5-6. Sec., Dr. J. H. Patterson, 826 Security Bldg., Phoenix.

ARKANSAS: * *Medical.* Nov. 3-4. Sec., Dr. D. L. Owens, Harrison. *Eclectic.* Little Rock, Nov. 4. Sec., C. H. Young, 1415 Main St., Little Rock.

CALIFORNIA: *Written.* Sacramento, Oct. 18-21. Sec., Dr. Frederick N. Scatena, 1020 N Street, Sacramento.

COLORADO: * Denver, Oct. 5-8. Final date for filing application is Sept. 20. Sec., Dr. J. B. Davis, 831 Republic Bldg., Denver.

CONNECTICUT: * *Written.* Hartford, Nov. 9-10. *Endorsement.* New Haven, Nov. 23. Sec. to the Board, Dr. Creighton Barker, 258 Church St., New Haven.

DELAWARE: *Written.* Dover, Jan. 11-13. *Endorsement.* Dover, Jan. 18. Sec., Medical Council of Delaware, Dr. Joseph S. McDaniel, 229 S. State St., Dover.

DISTRICT OF COLUMBIA: * Washington, Nov. 8-9. Sec., Commission on Licensure, Dr. G. C. Ruhland, 6150 E. Municipal Bldg., Washington.

FLORIDA: * Jacksonville, Nov. 22-23. Sec., Dr. William M. Rowlett, Box 786, Tampa.

GEORGIA: October or November. Sec., State Examining Boards, Mr. R. C. Coleman, 111 State Capitol, Atlanta.

IDAHO: Boise, Jan. 11. Dir., Bureau of Occupational Licenses, Mrs. Lela D. Painter, 355 State Capitol Bldg., Boise.

ILLINOIS: Chicago, Oct. 12-14. Superintendent of Registration, Department of Registration and Education, Mr. Philip M. Harman, Springfield.

IOWA: * Iowa City, Dec. 27-29. Dir., Division of Licensure and Registration, Mr. H. W. Grefe, Capitol Bldg., Des Moines.

KANSAS: Kansas City, Feb. 2-3. Sec., Dr. J. F. Hassig, 905 N. Seventh St., Kansas City.

KENTUCKY: Louisville, Dec. 6-8. Sec., Dr. Philip E. Blackerby, 620 S. Third St., Louisville.

MAINE: Portland, Nov. 9-10. Sec., Dr. Adam P. Leighton, 192 State St., Portland.

MARYLAND: *Medical.* Baltimore, Dec. 14-17. Sec., Dr. J. T. O'Mara, 1215 Cathedral St., Baltimore. *Homeopathic.* Baltimore, Dec. 14-15. Sec., Dr. J. A. Evans, 612 W. 40th St., Baltimore.

MASSACHUSETTS: Boston, Nov. 16-19. Sec., Board of Registration in Medicine, Dr. H. Q. Gallupe, 413-F State House, Boston.

MICHIGAN: * Ann Arbor, Oct. 13-15. Sec., Board of Registration in Medicine, Dr. J. Earl McIntyre, 100 W. Allegan St., Lansing.

MINNESOTA: * Minneapolis, Oct. 19-21. Sec., Dr. J. F. DuBois, 230 Lowry Medical Arts Bldg., St. Paul.

MISSISSIPPI: Jackson, September. Asst. Sec., State Board of Health, Dr. R. N. Whitfield, Jackson.

MISSOURI: St. Louis, Nov. 15-17. Sec., State Board of Health, Dr. James Stewart, State Capitol Bldg., Jefferson City.

MONTANA: Helena, Oct. 5-6. Sec., Dr. O. G. Klein, First Nat'l Bank Bldg., Helena.

NEW JERSEY: Trenton, Oct. 19-20. Sec., Dr. E. S. Hallinger, 28 W. State St., Trenton.

NEW MEXICO: * *Endorsement.* Santa Fe, Oct. 11-12. Sec., Dr. LeGrand Ward, 141 Palace Ave., Santa Fe.

NEW YORK: Albany, Buffalo, New York and Syracuse, Sept. 20-23. Chief, Bureau of Professional Examinations, Mr. H. L. Field, Education Bldg., Albany.

NORTH DAKOTA: Grand Forks, Jan. 4-7. Sec., Dr. G. M. Williamson, 4½ S. Third St., Grand Forks.

OHIO: *Endorsement.* Columbus, Oct. 7. *Written.* Columbus, Dec. 4. Sec., Dr. H. M. Platter, 21 W. Broad St., Columbus.

PENNSYLVANIA: Philadelphia and Pittsburgh, January. Act. Sec., Bureau of Professional Licensing, Department of Public Instruction, Mrs. Marguerite G. Steiner, 358 Education Bldg., Harrisburg.

RHODE ISLAND: * Providence, Oct. 7-8. Chief, Division of Examiners, Mr. Thomas B. Casey, 366 State Office Bldg., Providence.

SOUTH CAROLINA: Charleston, Dec. 20-22. Sec., Dr. N. B. Heyward, 1329 Blanding St., Columbia.

SOUTH DAKOTA: * Pierre, Jan. 18-19. Dir., Medical Licensure, State Board of Health, Dr. Gilbert Cottam, Pierre.

TENNESSEE: * Memphis and Nashville, Sept. 29-Oct. 1. Sec., Dr. H. W. Qualls, 1635 Exchange Bldg., Memphis.

VERMONT: Burlington, Dec. 15-17. Sec., Dr. F. J. Lawliss, Richford.

VIRGINIA: Richmond, Dec. 14-17. Sec., Dr. J. W. Preston, 30½ Franklin Road, Roanoke.

WEST VIRGINIA: Charleston, Oct. 25-27. Commissioner, Public Health Council, Dr. John E. Offner, State Capitol, Charleston.

WYOMING: Oct. 4-5. Sec., Dr. M. C. Keith, Capitol Bldg., Cheyenne.

* Basic Science Certificate required.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

ARIZONA: Tucson, Sept. 21. Sec., Dr. Robert L. Nugent, Science Hall, University of Arizona, Tucson.

CONNECTICUT: Oct. 9. Address State Board of Healing Arts, 250 Church St., New Haven.

DISTRICT OF COLUMBIA: Washington, Oct. 18-19. Sec., Dr. G. C. Ruhland, 6150 E. Municipal Bldg., Washington.

FLORIDA: DeLand, Nov. 6. Sec., Dr. John F. Conn, John B. Stetson University, DeLand.

IOWA: Des Moines, Oct. 12. Dir., Division of Licensure & Registration, Mr. H. W. Grefe, Capitol Bldg., Des Moines.

MINNESOTA: Minneapolis, Oct. 5-6. Sec., Dr. J. C. McKinley, 126 Millard Hall, Univ. of Minnesota, Minneapolis.

NEBRASKA: Lincoln, Oct. 5-6. Dir., Bureau of Examining Boards, Mr. Oscar F. Humble, 1009 State Capitol Bldg., Lincoln.

NEW MEXICO: Feb. 7. Sec., Miss Pia Joerger, State Capitol, Santa Fe.

OREGON: Portland, Oct. 30. Sec., State Board of Higher Education, Mr. C. D. Byrne, University of Oregon, Eugene.

SOUTH DAKOTA: Vermillion, December. Sec., Dr. G. M. Evans, Yankton.

TENNESSEE: Nashville and Memphis, Dec. 10-11. Sec., Dr. O. W. Hyman, 874 Union Ave., Memphis.

WISCONSIN: Madison, Sept. 18. Sec., Prof. R. N. Bauer, 152 W. Wisconsin Ave., Milwaukee.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Malpractice: Alleged Negligence in Treatment of Eye Injury.—In the course of his employment the plaintiff suffered an eye injury, the exact nature of which the reported opinion does not make clear. He was attended by the defendant, an eye, ear, nose and throat physician, for about three months. The treatment administered by the physician "at first consisted of atropine to dilate the pupil, hot applications, and injections of French protein." During the latter stages of the treatment butyn was prescribed for the relief of pain. Treatments were administered either by the physician, by his office assistant under his directions and occasionally in his absence, and by the patient himself at intervals and in quantities prescribed by the physician. About three months after the industrial accident, the plaintiff's physical condition suddenly grew worse. He lost weight rapidly, his eye pained him severely, sores appeared over his face, his ear became abscessed, and he developed stomach trouble. He consulted another physician, who enucleated the eye. Subsequently the patient brought suit against the defendant physician, contending that his eye should have been enucleated immediately after the accident and that the treatment administered to him by the physician was not in the exercise of reasonable care and skill, and caused the subsequent ailments and suffering that befell him. He also alleged that the physician was guilty of malpractice (1) in authorizing and permitting his assistant, who was neither a physician nor a registered nurse, to treat him by probing his eye and giving him injections, and (2) in prescribing medicines for self administration. The trial court directed a verdict for the physician, and the patient appealed to the circuit court of appeals, fifth circuit.

It is the law in Georgia, said the circuit court of appeals, the state in which the treatment in question was administered, that a practicing physician must bring to the exercise of his profession a reasonable degree of care and skill, and any injury resulting from a failure to exercise such care and skill is a tort. The record in this case is wholly lacking in evidence, expert or otherwise, to the effect that the treatment administered by the defendant physician was not in the exercise of reasonable care and skill and was not in accordance with approved medical practice. There is no evidence of any kind indicating that the patient's varied physical ailments were, or were likely to be, the result of the course of treatment undertaken by the physician. The sense of the testimony of the physician, on examination in the trial court as an adverse witness, was that the treatment given to the patient conformed in all respects to standard medical practice and that none of the ailments from which the patient suffered before the eye was

enucleated could or did result from the treatment administered to him by the physician. This testimony was not contradicted, and it is the only evidence in the record relating to whether or not reasonable care and skill was exercised and whether or not a standard course of treatment was pursued. The evidence indicates that the physician's assistant was permitted to give the patient injections of French protein, to place hot applications on his eye and to administer atropine under the direction of the physician or in his absence; but it is clear that these ministrations were not such as required greater professional training than the assistant, by virtue of seventeen years of experience in the employ of the physician, was fully competent to administer.

The judgment in favor of the physician was affirmed.—*Slack v. Crawford; Crawford v. Slack, 131 F. (2d) 101 (1942).*

Malpractice: Statute of Limitation Does Not Begin to Run Until Cessation of Treatment.—The defendant dentist on July 15, 1938 attempted to extract one of the plaintiff's lower third molars. After the extraction the socket of the extracted tooth bothered the patient, and about ten days later the patient returned to the dentist for treatment, as the socket was infected and exuded "much greenish pus." The dentist flushed out the infected area, but the socket continued to bother the patient and his condition became progressively worse. He returned for further treatments two or three times monthly until Oct. 20, 1939. The dentist continued to flush out the infected area but never had a roentgenogram taken to ascertain the cause of the trouble. A roentgenogram taken by another dentist about Oct. 20, 1939 disclosed two roots of the extracted tooth in a highly infected area surrounding the tooth socket. The roots were subsequently extracted by another dentist. Later, on Sept. 30, 1940, the patient sued the dentist for malpractice. An Oregon statute (the state in which the tooth was extracted) requires a suit for malpractice to be instituted within two years after "the cause of action shall have accrued." Agreeing at first with a contention of the dentist that the cause of action, if any, accrued at the time of the extraction of the tooth, July 15, 1938, and that the statute required suit to be instituted within two years thereafter, the trial court, in effect, dismissed the action on the ground that it had not been timely instituted. Later, however, the court on more mature reflection granted a new trial because it concluded that the negligence, if any, of the dentist was a continuing tort, that the cause of action did not accrue and the statute of limitations did not begin to run until the dentist ceased his treatment, namely, on Oct. 20, 1939, and that the suit having been started in September 1940 had been started timely. The dentist then appealed to the Supreme Court of Oregon.

The sole question involved in this appeal, said the Supreme Court, is whether the action has been commenced within two years after the accrual of the cause of action. The dentist argues that the cause of action accrued July 15, 1938, when the tooth was extracted, but the fallacy in his contention lies in an assumption that no continuing tort is involved. The duty and obligation of the dentist to his patient did not end on the partial extraction of the tooth. True, the mere fact in itself that the lower third molar was broken or crushed in extraction is not evidence of negligence. Dentists, like physicians and surgeons, are not guarantors of good results. A dentist is obliged only to exercise reasonable care and skill in the treatment of his patient. As to what constitutes reasonable care and skill—that is determined by the degree of care and skill ordinarily exercised by members of his own profession in similar places. The evidence in this case fails to disclose negligence in the original extraction of the tooth. It is common knowledge that an impacted wisdom tooth is difficult to extract and the operation often results in breaking parts of the roots. A dentist's work is not completed, however, by a partial extraction. The negligence here is really predicated on the failure to exercise due care and skill in diagnosing the cause of the plaintiff's trouble and in permitting the broken parts of the roots to remain in the tooth socket. Had the dentist taken or procured a roentgenogram it is reasonable to assume that there would have been no difficulty in diagnosing the case.

That the negligence of the dentist, if any, constituted a continuing tort the court regarded as a settled question by reason of *Shives* v. *Chamberlain,* 126 P. (2d) 28, which it had decided earlier in the year. In that case the gravamen of the plaintiff's cause of action was the alleged failure of the defendant specialist to diagnose and treat a case of glaucoma. The treatment extended over a year's time from month to month. It was urged there, as here, that the action was barred by the statute of limitations, but the court said:

> This continued treatment, when shown to have been based upon a mistaken diagnosis and not of a character employed by the medical profession in dealing with cases of glaucoma, constituted a continuing tort causing the statute of limitations to start only when such treatment ceased.

The alleged negligent treatment of the dentist, continued the court, must be considered as a whole. The patient was not obliged to split his cause of action. The continued negligent treatment constituted but a single cause of action. Where the tort is continuing, the right of action is continuing. In the instant case there was a continuing duty of the dentist to exercise due care and skill in diagnosing the cause of the infection surrounding the tooth socket. As was said by the Supreme Court of Utah in *Peteler* v. *Robison,* 81 Utah 535, 17 P. (2d) 244:

> Here the defendant undertook to treat the plaintiff for a throat affliction. From the time he undertook to treat the case until he ceased to treat it he, as alleged, did so in a negligent and unskilful manner. As alleged, the treatments were not separate and distinct acts, separate and distinct causes of action. They constituted an entire course of treatment of a case undertaken by defendant to be treated by him, and the whole thereof constituted but one cause of action. *Creen* v. *Michigan Cent. R. Co.,* 168 Mich. 104, 133, N. W. 956. Ann. Cas. 1913C, 98, and notes on page 101. From the averments of the complaint, we think it should here be said, as was said in the case of *Sly* v. *Van Lengen,* supra, that the tort was a continuing one, and, where the tort is continuing, the right of action is also continuing.

The rule that the statute of limitation runs from the last date of the continuous negligent treatment is just and equitable. A rule to the contrary would often result in miscarriage of justice and would penalize a patient who, under continuous treatment, assumes that due care and skill will be exercised. Some courts hold that it is a harsh rule which precludes an injured patient from maintaining an action at a time when it was impossible to know that any existed. *Huysman* v. *Kirsch,* 6 Cal. (2d) 302, 57 P. (2d) 908.

The court accordingly affirmed the order granting a new trial to the patient.—*Hotelling v. Walther, 130 P. (2d) 944 (Ore., 1942).*

Society Proceedings

COMING MEETINGS

American Academy of Ophthalmology and Otolaryngology, Chicago, Oct. 10-13. Dr. W. L. Benedict, 102 Second Ave. S.W., Rochester, Minn., Secretary.

American Public Health Association, New York, Oct. 12-14. Dr. Reginald M. Atwater, 1790 Broadway, New York, Executive Secretary.

Association of Military Surgeons of the United States, Philadelphia, Oct. 21-23. Colonel James M. Phalen, Army Medical Museum, Washington, D. C., Secretary.

Delaware, Medical Society of, Wilmington, Oct. 12-13. Dr. W. O. La Motte, 601 Delaware Ave., Wilmington, Secretary.

District of Columbia, Medical Society of the, Washington, Sept. 30-Oct. 2. Mr. Theodore Wiprud, 1718 M St. N.W., Washington, Secretary.

Indiana State Medical Association, Indianapolis, Sept. 28-30. Mr. T. A. Hendricks, 23 East Ohio St., Indianapolis, Executive Secretary.

Inter-State Postgraduate Medical Association of North America, Chicago, Oct. 26-29. Dr. Arthur G. Sullivan, 16 North Carroll St., Madison, Wis., Managing Director.

Kansas City Southwest Clinical Society, Kansas City, Mo., Oct. 4-6. Dr. William M. Korth, 1115 Grand Ave., Kansas City, Mo., Secretary.

Kentucky State Medical Association, Louisville, Oct. 4-6. Dr. P. E. Blackerby, 620 South Third St., Louisville, Acting Secretary.

Michigan State Medical Society, Detroit, Sept. 22-24. Dr. L. Fernald Foster, 2020 Olds Tower, Lansing, Secretary.

Mississippi Valley Medical Society, Quincy, Ill., Sept. 29-30. Dr. Harold Swanberg, 510 Maine St., Quincy, Ill., Secretary.

Oklahoma City Clinical Society, Oklahoma City, Oct. 18-21. Dr. Clark H. Hall, 117 North Broadway, Oklahoma City, Secretary.

Omaha Mid-West Clinical Society, Omaha, Oct. 25-29. Dr. J. D. McCarthy, 1036 Medical Arts Bldg., Omaha, Secretary.

Pennsylvania, Medical Society of the State of, Philadelphia, Oct. 5-7. Dr. Walter F. Donaldson, 500 Penn Ave., Pittsburgh, Secretary.

Virginia, Medical Society of, Roanoke, Oct. 25-27. Miss Agnes V. Edwards, 1200 East Clay St., Richmond, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1933 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Medical Sciences, Philadelphia

205:765-900 (June) 1943

*Pneumonia Due to Streptococcus Viridans. S. Solomon and M. Kalkstein.—p. 765.
*Pneumococcic Pneumonia: Selection and Control of Serum and Chemotherapy by Sputum Examination. A. W. Frisch, A. E. Price and G. B. Myers.—p. 771.
Xanthomatosis—Hand-Schüller-Christian Type: Report of Case with Pulmonary Fibrosis. J. H. Currens and W. C. Popp.—p. 780.
Antibacterial Action of Lactic Acid and Volatile Fatty Acids of Sweat. O. Bergeim and T. Cornbleet.—p. 785.
Present Position of Gastroscopy in Diagnosis of Gastric Disease. M. Paulson.—p. 792.
Malignant Tumors in Persons with Cirrhosis of Liver. S. Peller.—p. 798.
Case of Toothpick Perforation of Intestines. W. O. Goehring.—p. 807.
Studies on Prothrombin: II. Effects of Single Small Dose of Dicumarol (3,3'-Methylene-Bis [4-Hydroxycoumarin]) in Liver Disease. S. Shapiro, M. H. Redish and H. A. Campbell.—p. 808.
Production of Cysts Following Intramuscular Injection of Vegetable Oils. R. C. Page and E. J. De Beer.—p. 812.
Gallop Rhythm—Incidence and Influence of Age, Race and Sex. C. F. Garvin.—p. 814.
Studies on Effect and Mechanism of Amphetamine Sulfate on Weight Reduction. R. H. Kunstadter and H. Necheles, assisted by M. Weiner.—p. 820.
Vacuum Dried Human Serums in Prevention and Treatment of Certain of Common Communicable Diseases—An Eight Year Study. A. C. McGuinness, J. Stokes Jr. and Janet G. Armstrong.—p. 826.
Toxic Effects of Promin (Sodium P,P'-Diaminodiphenyl-Sulfone-N,N'-Didextrose Sulfonate) on Erythrocytes of Guinea Pigs. G. M. Higgins.—p. 834.
Febrile Reactions Resulting from Readministration of Sulfadiazine. T. R. Talbot Jr. and J. D. Adcock.—p. 841.
Studies on 2-Sulfanilamido-4-Methyl-Pyrimidine (Sulfamerazine, Sulfamethyldiazine) in Man: II. Toxic Manifestations. J. K. Clark, H. F. Flippin and F. D. Murphy.—p. 846.
Relationship Between Riboflavin Intake and Thiamine Excretion in Man. C. T. Klopp, J. C. Abels and C. P. Rhoads.—p. 852.

Pneumonia Due to Streptococcus Viridans.—Solomon and Kalkstein describe 5 cases of atypical pneumonia in which Streptococcus viridans appears to have been the etiologic agent, since it was recovered from sources other than the sputum. The following features suggest that pneumonia was due to S. viridans; (*a*) a prolonged severe course with a high mortality rate, (*b*) severe pleuritic reaction with serous effusion and (*c*) failure of response to chemotherapy. Atypical pneumonia not responding to chemotherapy may be caused by S. viridans. A careful search for this organism should be instituted from the blood and pleural fluid as well as the sputum.

Pneumococcic Pneumonia: Sputum Examination.—Frisch and his associates present data concerning the sputum count as a means of selecting therapy and a means of evaluating control of dosage of both serum and the sulfonamide drugs in patients with pneumonia. The treatment of pneumococcic pneumonia was individualized by dividing the cases into three major prognostic groups according to the number of pneumococci in Wright stained smears of rusty sputum. The cases in the first group represented approximately 50 per cent of the total admissions and were classed as relatively mild on the basis of sputum counts of 10 or less during the course of the disease. Over 95 per cent of these recovered with supportive therapy and with small doses of serum or with sulfonamides. Although the low fatality rate of 2 per cent was not appreciably altered by sulfonamides, the pneumococci were more effectively prevented from multiplying and a more rapid defervescence was induced. The patients in the second group represented approximately 35 per cent of the total admissions and were classed as moderately ill on the basis of sputum counts between 11 and 35 per field. By decreasing the dosage when a therapeutic response was elicited in the sputum, the total amount of sulfonamide administered was significantly reduced without affecting the final fatality rate. The last group with sputum counts over 35 included only 15 per cent of the total cases but was responsible for 70 per cent of the deaths. The sodium salts of the sulfonamides in large doses intravenously were the most effective therapeutic agents. Supplementary serum proved to be of no additional value in the most severe cases with sputum counts exceeding 50 per field.

American J. Obstetrics and Gynecology, St. Louis

45:915-1094 (June) 1943

Status of Artificial Insemination: Critical Review. C. E. Folsome.—p. 915.
*Contractions of Human Uterus During Menstrual Cycle: Effect of Progesterone and Posterior Pituitary Extract on Motility of Human Uterus. J. S. Henry and J. S. L. Browne.—p. 927.
Weight Gain in Pregnancy and Its Relation to Weight of Infants and to Length of Labor. A. Kerr Jr.—p. 950.
Study of Salt Restriction and of Fluid Intake in Prophylaxis Against Preeclampsia in Patients with Water Retention. L. C. Chesley and J. E. Annitto.—p. 961.
Low Dosage Irradiation to Pituitary Gland and Ovaries in Amenorrhea and Dysfunctional Uterine Bleeding: Long Term Survey. L. Reidenberg.—p. 971.
Use of Heroin (Diacetylmorphine) in Labor: Report of 454 Deliveries. C. J. Lund and J. W. Harris.—p. 980.
Relation of Cerebral Dysrhythmia to Eclampsia. M. Rosenbaum and G. L. Maltby.—p. 992.
Breech Presentations Treated by Cephalic Versions in Consecutive Deliveries of 1,700 Women. G. H. Ryder.—p. 1004.
Carcinoma and Sarcoma in Same Uterus. B. P. Watson.—p. 1025.
Reconstruction of Oviducts in Humans: Results Obtained with Use of New Technic. J. R. Gepfert.—p. 1031.
New Treatment for Intractable Pruritus Vulvae. W. J. Reich, Helen Button and M. J. Nechtow.—p. 1036.
Uterus Didelphys with Endometriosis. R. E. McDonald.—p. 1038.
Bilateral Adenocarcinoma of Fallopian Tubes. D. F. Mullins and R. Mosteller.—p. 1042.
Vasa Previa. W. H. Vogt Jr.—p. 1044.
Intestinal Tissue in Umbilical Cord. C. J. Bartlett and I. J. Marshak.—p. 1046.
Cornual Pregnancy. H. M. Radman.—p. 1048.
New Abdominal Binder for Intrapartum Use: Preliminary Report. O. H. Bloom.—p. 1050.

Contractions of Human Uterus During Menstrual Cycle.—Henry and Browne studied one or more cycles in 4 women with normal ovarian and uterine function. The studies included pregnandiol assays, endometrial biopsies and uterine tracings; a fifth woman was completely studied except that urinary assays were not done every day; a sixth whose cycles were abnormal to the extent that she was unable to conceive was also studied and a seventh had tracings and biopsies done in one cycle but no pregnandiol assays were made. In each the uterus contracted more strongly and was much more greatly affected by posterior pituitary injection in the presence of the corpus luteum than during the follicle phase. An artificially produced cycle showed a similar increase in spontaneous activity and response to posterior pituitary injection after the injection of 20 mg. of progesterone. Two cases of anovulatory cycles showed spontaneous activity and response to posterior pituitary injection characteristic of the follicle phase. The authors conclude that the uterus of the sexually mature woman is spontaneously active and responds to posterior pituitary injection throughout the entire cycle. Its spontaneous activity and sensitivity to posterior pituitary injection are greatest in the luteal phase; both reach their maximum just before the onset of menstruation or during its first day. The weight of experimental evidence and of experience is against the claims made for the use of progesterone in treating dysmenorrhea and afterpains. If it is of value in the therapy of abortion, it must be because of its action in maintaining the decidua and so making possible the vital maternal-fetal connections.

American Journal of Ophthalmology, Cincinnati

26:565-674 (June) 1943

Molluscum Contagiosum of Eye, Its Clinical Course and Transmissibility and Cultivability of Virus. L. A. Julianelle and W. M. James.—p. 565.
New Cross Cylinder Test for Astigmatic Axis Without Use of Test Type. W. H. Crisp.—p. 571.
Malingering Tests. J. O. Wetzel.—p. 577.
Surgery of Inferior Oblique At or Near Insertion. J. W. White.—p. 586.
Ocular Rosacea. G. Wise.—p. 591.

American Journal of Physiology, Baltimore

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Demonstration of Antithromboplastic Activity in Normal and Hemophilic Plasmas. L. M. Tocantins.—p. 265.
Effect of Selection of Data on Mean Basal Metabolism and Variability of Basal Metabolism of Large Series of College Women. Charlotte M. Young, Martha S. Pittman, Eva G. Donelson and Gladys M. Kinsman.—p. 280.
Effect of Menarche on Basal Physiologic Function in Girls. N. W. Shock.—p. 288.
Changes in Serum Phosphate and Calcium and Their Relation to Manifestations of Traumatic Shock. E. Mylon, M. C. Winternitz and G. J. de Sütö-Nagy.—p. 299.

Archives of Dermatology and Syphilology, Chicago

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Infection with Loa Loa. W. H. Guy, M. Cohen and F. M. Jacob.—p. 763.
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Ichthyosiform Atrophy of Skin in Hodgkin's Disease. F. Ronchese.—p. 778.
Chronic Scarring Pseudofolliculitis of Negro Beard. H. Pinkus.—p. 782.
Demodex Folliculorum: Its Incidence in Routine Histologic Study of Skin. L. Nicholas.—p. 793.
*Dermatitis Venenata Caused by Manzanillo Tree: Further Observations and Report of 60 Cases. E. M. Satulsky and C. A. Wirts.—p. 797.
Sensitivity to Tuberculin in Acne and in Other Nontuberculous Diseases of Skin. K. Loewenthal.—p. 799.
Lentigines: Their Possible Significance. E. E. Brown.—p. 804.
Bacteriology of Feet and Incidence of Dermatophytosis of Feet of High School Students. G. I. Wallace and H. E. Moorman.—p. 816.
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Histamine Test: With Particular Reference to Diagnosis of Leprosy. V. Pardo-Castello and F. R. Tiant.—p. 826.
Combating Lymphogranuloma Venereum. W. Frei.—p. 830.
Incidence of Dermatoses in Twenty Thousand Army Induction Examinations: With Note on Syphilis with Negative Serologic Reactions. E. S. Bereston and E. M. Ceccolini.—p. 844.
*Chlorophyll in Treatment of Ulcers. E. Gahan, P. R. Kline and T. H. Finkle.—p. 849.

Dermatitis Venenata Caused by Manzanillo Tree.—Satulsky and Wirts direct attention to the hazards of contact with the manzanillo tree, which is found on beaches in the republic of Panama and the Canal Zone. It caused dermatitis in soldiers who were establishing a beach defense. The first patient had been awakened by severe burning and pain of his face and shortly after opening his eyes he noted that they too began to burn. There were numerous erythematous macules on the face and neck. The conjunctivas were red and edematous. The edema became so severe that on the left side part of the palpebral conjunctiva overhung the lower lid. Morphine sulfate ¼ grain (16 mg.) was given subcutaneously, warm saline compresses were applied to the face and neck and an ointment containing boric acid in 5 per cent concentration was applied before evacuating the patient to a hospital. During the next four hours 60 men had to be evacuated because they were unfit for combat duty. At least 50 per cent were temporarily blinded because of severe conjunctivitis and edema of the eyelids. Daylight revealed numerous manzanillo trees in the areas where the men had slept. All the patients recovered without sequelae, and most of them were returned to duty in seven to eight days.

Chlorophyll for Ulcers.—Chlorophyll in the form of an ointment or of an aqueous solution was used by Gahan and his collaborators in the treatment of 25 patients with ulcers of various origins. The ointment consisted of oil soluble derivatives of chlorophyll mixed with hydrous wool fat in the proportion of 1 to 28. The aqueous solution was made by dissolving 2 Gm. of a water soluble derivative of chlorophyll in a liter of distilled isotonic solution of sodium chloride. The ointment was used topically; the solution was used for wet dressings for ulcers which were surrounded by severe inflammatory zones. Among the 25 patients there were 19 who responded favorably to local treatment with chlorophyll. It appeared to have a stimulating effect on the supportive tissues. In some cases the production of granulation tissue in a torpid ulcer was rapid.

Archives of Surgery, Chicago

46:793-952 (June) 1943

Experimental Gastric Carcinoma. A. Nettleship.—p. 793.
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Chronic Atrophic Gastritis and Cancer of Stomach. L. W. Guiss and F. W. Stewart.—p. 823.
Metabolic Abnormalities in Patients with Cancer of Gastrointestinal Tract: Review of Recent Studies. J. C. Abels, I. Ariel, P. E. Rekers, G. T. Pack and C. P. Rhoads.—p. 844.
Mistakes and Misunderstandings in Roentgenologic Diagnosis of Gastric Cancer. B. R. Kirklin.—p. 861.
Gastroscopic Diagnosis of Gastric Cancer. L. Schiff.—p. 865.
Surgical Care of Patients with Gastric Cancer Before and After Operation. I. S. Ravdin, H. P. Royster, Cecilia Riegel and J. E. Rhoads.—p. 871.
Surgical Problem of Gastric Cancer: With Special Reference to (1) Closed Method of Gastric Resection, (2) Coincidental Hepatic Resection and (3) Preoperative and Postoperative Management. O. H. Wangensteen.—p. 879.
Total Gastrectomy for Carcinoma of Stomach. R. R. Graham.—p. 907.
Transthoracic Resection for Cancer of Cardiac End of Stomach. D. B. Phemister.—p. 915.
Transthoracic Subtotal Gastrectomy and Esophagectomy for Cancer: Report of Case. G. T. Pack and W. L. Watson.—p. 930.
*Prognosis and End Results in Treatment of Cancer of Stomach. W. Walters, H. K. Gray and J. T. Priestley.—p. 939.

Prognosis and End Results in Treatment of Cancer of Stomach.—Walters and his co-workers report that from 1907 to 1938 inclusive the diagnosis of carcinoma of the stomach was made at the Mayo Clinic in 10,890 cases. The lesions in 4,648 (42.7 per cent) were considered to be inoperable, and only palliative medical treatment was given. The remaining 6,242 (57.3 per cent) patients underwent exploratory operation in the hope that gastric resection might be accomplished. Among this group, inoperable lesions were found in 2,431 cases (22.3 per cent of the entire series of 10,890 cases). In an additional group of 1,039 cases (9.5 per cent of the original series of 10,890 cases) the lesion could not be removed but some palliative procedure was performed. In 2,772 (25.5 per cent) of the 10,890 cases in which the diagnosis was established, gastric resection was accomplished. Thus approximately 1 of 4 persons had the lesions removed surgically and thereby, provided they survived the operation, had some chance of cure. The resectability rate (calculated on all patients) was 25.5 per cent. When the resectability rate is calculated from only the number of patients on whom operation was performed, it is found to be 44.4 per cent. The resectability rate is important because, even though the surgical rate may be high or may gradually increase as time goes on, this change does not mean that the ultimate results are being improved unless the resectability rate continues to be high. The mortality rate for all types of gastric resection was 16.2 per cent. With improvement in operative technic this mortality rate was reduced to 10.9 per cent for the years 1940 and 1941 together. Of the patients who underwent resection and who survived the operation, 28.9 per cent lived five years or longer and 6.3 per cent lived twenty-five years or longer. The lower the grade of malignancy according to Broders, the better was the prognosis and, conversely, the higher the grade of malignancy the worse the prognosis. Eighty-six and two tenths per cent of the patients who had carcinoma of grade 1 were alive five years after resection, whereas only 23.3 per cent of patients with carcinoma grade 4 were living after a comparable period. From the prognostic standpoint the presence or absence of involvement of the regional lymph nodes was of the greatest significance. In cases in which the regional lymph nodes were not involved the five year survival rate was 43.1 per cent, as contrasted with only 16.5 per cent in cases in which the regional lymph nodes were involved. If a patient lived five or more

years after resection of a carcinoma of the stomach, the chance of survival during the ensuing years was found to be about the same as it is for any person of comparable age in the general population.

Illinois Medical Journal, Chicago

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Value of Miniature Chest Films. A. S. Webb.—p. 412.
Considerations on One Thousand Chest X-Ray Examinations Performed on Men Applying for Employment. A. A. Bauer.—p. 415.
Tuberous Sclerosis. H. Josephy.—p. 418.

Journal of Infectious Diseases, Chicago

72:97-176 (March-April) 1943

Attempts to Propagate Virus of Poliomyelitis in Smaller Laboratory Animals. J. L. Schwab, O. C. Woolpert and N. P. Hudson.—p. 97.
Study of Latent Pneumotropic Virus of Mice. Helen Valerie Karr. —p. 108.
Cellular Reactions in Dermal Connective Tissue of Hamster to Leishmania Brasiliensis. H. Rey.—p. 117.
Infectivity and Immunizing Effect of St. Louis Encephalitis Virus Propagated in Mouse Brain and in Chick Egg. Margaret G. Smith. —p. 125.
Effect of Various Stages of Vitamin A Deficiency in White Rat on Resistance to Nippostrongylus Muris. E. G. Riley.—p. 133.
Production of Experimental Influenza in Mice by Inhalation of Atmospheres Containing Influenza Virus Dispersed as Fine Droplets. C. G. Loosli, O. H. Robertson and T. T. Puck.—p. 142.
*Action of Tryothricin on Fecal Streptococci in Vitro and in Vivo. Enid C. Rodaniche and W. L. Palmer.—p. 154.
Anaerogenic Variant of Salmonella Enteritidis (Gaertner) Isolated from an Enzootic Among Domestic and Wild Rats. R. A. Bruce and H. E. Dascomb.—p. 157.
Some Observations on Decline of Pneumonic Plague Epidemics. R. Pollitzer and C. C. Li.—p. 160.
Studies on Transmission of Western Strain Virus of Equine Encephalomyelitis by American Dog Tick Dermacentor Variabilis Say and by Triatoma Sanguisuga (LeConte). A. W. Grundmann, C. M. Kitselman, L. M. Roderick and R. C. Smith.—p. 163.
Protective Action of Vi Bacteriophage in Eberthella Typhi Infections in Mice. W. E. Ward.—p. 172.

Action of Tyrothricin on Fecal Streptococci.—According to Rodaniche and Palmer, Streptococcus fecalis has been shown to possess strong resistance against sulfonamide compounds and penicillin. It seemed of interest, therefore, to test its resistance in vitro and in vivo against tyrothricin. Thirty strains of fecal streptococci, including only types showing alpha or gamma hemolysis, were tested, together with five strains of throat streptococci. The latter were included for purposes of comparison. A similar technic to that employed by Rammelkamp for the study of the action of tyrothricin on Staphylococcus aureus was adopted. The in vivo tests were made on albino mice. The authors found that tyrothricin is highly bactericidal and bacteriostatic to Streptococcus fecalis and related fecal streptococci in vitro. Considerable variation in susceptibility occurs from strain to strain. Oral administration of tyrothricin may produce inhibition of the growth of streptococci in the intestine of mice. This inhibition is most readily demonstrated when succinylsulfathiazole is administered together with tyrothricin.

Journal of Nutrition, Philadelphia

25:511-620 (June) 1943

Effects of Inanition and Riboflavin Deficiency on Blood Picture of Rat. C. F. Shukers and P. L. Day.—p. 511.
Assay of Vitamin B_1 in New Zealand Materials by Thiochrome Method. Doris I. Allen.—p. 521.
Carotene Content of Tomatoes as Influenced by Various Factors. G. H. Ellis and K. C. Hamner.—p. 539.
Role of "Folic Acid" and Biotin in Nutrition of Rat. A. D. Welch and L. D. Wright, with technical assistance of K. L. Sprague.—p. 555.
Biologic Assay of Pyridoxine (Vitamin B_6). Miriam F. Clarke and Marie Lechycka.—p. 571.
Contribution of Non Fat Milk Solids to Nutritive Value of Wheat Breads. H. H. Mitchell, T. S. Hamilton and J. B. Shields, with technical assistance of J. R. Beadles.—p. 585.
Bodily Store of Vitamin A as Influenced by Age and by Food. Alice B. Rohrer and H. C. Sherman.—p. 605.

Journal Pharmacology & Exper. Therap., Baltimore

78:109-214 (June) 1943

Studies on Detoxication of Organic Arsenical Compounds. J. H. Sandground and C. R. Hamilton.—p. 109.
Anesthesia: VIII. Anesthetic Action of Isopropenyl Methyl Ether. J. C. Krantz Jr., C. J. Carr, W. E. Evans Jr. and S. E. Forman.—p. 115.
Studies on Antimalarials: Accumulation and Excretion of Atabrine. E. H. Dearborn, F. E. Kelsey, Frances K. Oldham and E. M. K. Geiling.—p. 120.
Hematic and Organic Reactions in Standardized and Graded Histamine Shock in Dogs. W. C. Hueper and C. T. Ichniowski.—p. 127.
Ineffectiveness of Adrenal Cortex Extracts in Standardized Hemorrhagic Shock. K. A. Huizenga, B. L. Brofman and C. J. Wiggers.—p. 139.
Estimation of Quinine in Human Plasma with Note on Estimation of Quinidine. B. B. Brodie and S. Udenfriend.—p. 154.
Comparative Activity of Quinine, Quinidine, Cinchonine, Cinchonidine and Quinoidine Against Plasmodium Lophurae Infections of Pekin Ducklings. A. O. Seeler, E. Dusenbery and C. Malanga.—p. 159.
*Flavicin: An Antibacterial Substance Produced by an Aspergillus Flavus. M. T. Bush and A. Goth.—p. 164.
Possible Method for Determination of Prolonged Action of Barbiturates. V. V. Cole.—p. 170.
Further Studies on Separation from Kidney Tissue of Substance Capable of Reducing Blood Pressure in Experimentally Induced Hypertension. A. Grollman and T. R. Harrison.—p. 174.
Potency of New Extract of Convallaria Majalis Leaves: III. Assays by Papillary Muscle Procedure and U. S. P. XII Cat Method. J. B. Weeks and H. G. O. Holck.—p. 180.
Overt and Masked Manifestations of Folliculoid Hormones. Eleanor Clarke and H. Selye.—p. 187.
Dosage Relationships in Augmentation of Pituitary Gonadotropic Extract by Blood and Hemin. W. H. McShan, L. E. Casida and R. K. Meyer. —p. 197.

Flavicin, an Antibacterial Substance Produced by Aspergillus Flavus.—While studying the production of penicillin, Bush and Goth isolated a mold belonging to the Aspergillus flavus group which produced a powerful antibacterial substance. This mold appeared as a contaminant on one of their cultures of Penicillium notatum. It was able to dissolve Staphylococcus aureus and Staphylococcus albus. On further study the authors found that the aspergillus released in the culture medium an inhibitory substance which was active against a large number of bacterial species. They have succeeded in partially purifying this substance to such an extent that its activity per milligram is comparable to that of "therapeutic" penicillin against gram positive cocci. Flavicin, like penicillin, is a water soluble and ether soluble organic acid which has a powerful antibacterial activity. It differs from gramicidin, tyrocidin and penicillin B, which are protein or polypeptide in nature. Flavicin resembles penicillin in another respect: it is unstable in an acid environment, particularly on shaking with air. Although both penicillin and flavicin inhibit especially gram positive cocci, flavicin is more active against Corynebacterium diphtheriae, Bacillus anthracis, Staphylococcus albus and Brucella abortus than is penicillin. The available evidence suggests that flavicin is a powerful antibacterial agent against a wide variety of bacterial species.

Journal of Thoracic Surgery, St. Louis

12:397-502 (June) 1943

Thoracic Esophagectomy for Cancer: Report of 2 Successful Cases. P. Santy, M. Ballivert and M. Berard.—p. 397.
Short Esophagus with Simple Peptic Ulceration. P. R. Allison, A. S. Johnstone and G. B. Royce.—p. 432.
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Chronic Empyema. O. T. Clagett and V. D. Shepard.—p. 464
Total Pneumonectomy for Pulmonary Tuberculosis. M. Behrend.—p. 484.
"Spring Water" Cyst of Mediastinum: Case Report. I. Greenfield, I. Steinberg and A. S. W. Touroff.—p. 495.

Journal of Nervous and Mental Disease, New York

97:509-622 (May) 1943

Personality of Patients with Migraine. L. S. Trowbridge, Dorothy Cushman, M. Geneva Gray and M. Moore.—p. 509.
Peyote Intoxication: Some Psychologic Aspects of the Peyote Rite. W. Bromberg and C. L. Tranter.—p. 518.
Essential Pruritus Perinei. C. J. Drueck.—p. 528.
Neurologic Service at Boston City Hospital: Brief Account of First Twenty-Five Years (1876-1901). M. Moore.—p. 535.
Evaluation of Complaints After Head Injury. O. Kant.—p. 542.
Effect of Prostigmine and Acetylcholine on Denervated Muscle, with Remarks on Some General Effects of These Drugs. R. Altschul.—p. 549.
New Single Unit Portable Electrostimulator of Nerves and Muscles. H. de Jong.—p. 563.
Ambulatory Insulin Shock Technic in Treatment of Schizophrenia: Evaluation of Therapeutic Effects. P. Polatin and H. Spotnitz.—p. 567.

Michigan State Medical Society Journal, Lansing

42:321-416 (May) 1943

Toxic Effects of Chemotherapy. J. A. Toomey.—p. 341.
Sulfonamide Therapy in General Practice. H. E. Flippin.—p. 346.
Early Treatment of Compound Fractures. G. T. Aitken.—p. 353.
Prolonged Labor: Analysis of 206 Maternal Mortalities Associated with Prolonged Labor. P. F. Williams.—p. 365.

42:417-496 (June) 1943

Nasal Allergy. G. E. Shambaugh Jr.—p. 441.
Management of Barren Marriage. G. H. Gardner.—p. 446.
Maternity Hospitals and Homes: Facilities and Practices in Licensed Maternity Homes in Michigan. A. M. Campbell, H. A. Furlong, N. F. Miller, W. F. Seeley and H. W. Wiley.—p. 453.
Hemorrhagic Disease of Newborn. A. H. Parmelee.—p. 455.
Diarrhea of Newborn: Epidemiologic Aspects and Methods of Control. F. H. Top.—p. 459.
Newborn Period as Public Health Problem. C. G. Grulee.—p. 464.
Vertigo. J. L. Dill.—p. 469.

Minnesota Medicine, St. Paul

26:505-584 (June) 1943

The Physician in Civic Life. S. H. Baxter.—p. 521.
Thoracic Injuries. T. J. Kinsella.—p. 524.
Abdominal Injuries. M. G. Gillespie.—p. 529.
Shock, Its Cause and Treatment. C. E. Rea.—p. 531.
Treatment of Burns. N. L. Leven.—p. 534.
Management of Fractures Under War Conditions. H. B. Hall.—p. 537.
Episiotomy: Indications and Technic. J. J. Swendson.—p. 539.

New Orleans Medical and Surgical Journal

95:493-530 (May) 1943

Vesicant Chemical Warfare Agents. J. D. Rives.—p. 493.
Some Medical Aspects of Chemical Warfare Agents. E. Hull.—p. 499.
Some Things General Practitioner Should Know About Electrocardiogram. J. M. Bamber.—p. 501.
Problem of Industrial Hygiene. J. G. Townsend.—p. 505.
Some Toxic Reactions of Common Explosives. J. H. Eddy Jr.—p. 511.

Radiology, Syracuse, N. Y.

40:539-646 (June) 1943

Role of Cancer Clinic in Cancer Control. B. C. Crowell.—p. 539.
Experiences and Results in Tumor Clinic Organization in New York State. L. C. Kress and M. L. Levin.—p. 543.
Role of Surgeon in Tumor Clinic. J. A. Wolfer.—p. 549.
Tumor Clinic for Patients of Moderate Means. G. W. Holmes.—p. 554.
Practical Aspects of Tumor Clinic Management. E. Uhlmann.—p. 557.
Lymphosarcoma: Statistical Study and Evaluation of Treatment. W. E. Howes and Bella Levin.—p. 565.
Lesions of Inconstant Sesamoids of Foot. P. W. Lapidus.—p. 581.
Modified Classification of Bone Tumors. J. W. Budd and I. MacDonald.—p. 586.
Roentgen Pelvimetry and Fetometry: New Formula. G. C. Lechenger.—p. 589.

Surgery, St. Louis

13:823-1010 (June) 1943

*Total Gastrectomy: Effects on Nutrition and Hemopoiesis. J. M. Farris, H. K. Ranson and F. A. Coller.—p. 823.
Intestinal Strangulating Obstruction with Negative Roentgenologic Findings. L. Goldman.—p. 834.
*Experimental Studies of Value of Sulfathiazole in Peritonitis. E. J. Poth and E. B. Fernandez.—p. 847.
Anoxia and Anesthesia in Intrathoracic Operations: Clinical Study. W. E. Adams, T. F. Thornton Jr., A. J. Carlson and H. M. Livingstone.—p. 859.
Silver Plug as Method of Bronchial Closure in Experimental Pneumonectomy. S. R. Rosenthal, W. Va Hazel and C. Ireneus Jr.—p. 880.
Protein and Fluid Balance in Experimental Shock Produced by Intestinal Trauma. J. W. Howland and E. B. Mahoney.—p. 889.
Prolonged Dependent Drainage with "Lucite" Drains in Treatment of Chronic Osteomyelitis. C. Dennis.—p. 900.
Radical Operation for Intractable Pruritus Ani. F. Young and W. J. M. Scott.—p. 911.
Gastric Acidity Following Gastric Resection. C. W. Holman and B. McSwain.—p. 916.
*Acute Abdominal Symptoms in Arachnoidism: Black Widow Spider Bite. H. Wilson.—p. 924.
Evaluation of Some of Materials Commonly Used for Preoperative Preparation of Skin. C. A. Hatfield and J. S. Lockwood.—p. 931.
Resection of Colon in 6 Cases of Hirschsprung's Disease. L. Yeazell and H. G. Bell.—p. 941.
Postcholecystectomy Rupture of Common Bile Duct. A. Brunschwig.—p. 951.
Management of Appendical Stump. J. V. Goode and L. A. Kregel.—p. 956.

Effects on Nutrition and Hemopoiesis of Total Gastrectomy.—Of twenty-nine total gastrectomies performed at the University of Michigan Hospital, 24 patients survived the operation. The mortality rate following total gastrectomy is not prohibitive. The stomach does not play an essential role in the digestion of fats and protein. There is no experimental evidence that removal of the stomach will produce pernicious anemia. Primary anemia is rarely encountered following various gastric operations. Gastrectomy interferes with the metabolism of iron. The absorption of dextrose is more rapid than normal. This results in a transient hyperglycemia phase that is followed by hypoglycemia. The latter phase may produce characteristic symptoms. A high protein, low carbohydrate diet is efficacious in preventing these abnormalities. A woman aged 40 is living and well four years and seven months after a total gastrectomy. Intestinal motility is decreased rather than increased. This may be due to intra-abdominal section of the vagus nerves.

Sulfathiazole in Peritonitis.—Poth and Fernandez produced peritonitis in 60 animals by sectioning the duodenum 2 cm. distal to the main pancreatic duct and the jejunum distal to the Treitz ligament at a point permitting an end to end anastomosis to reestablish continuity of the gastrointestinal tract. The isolated loop was washed with 10 cc. of isotonic solution of sodium chloride and the washings were studied bacteriologically. The loop was dropped into the peritoneal cavity with its distal end open. Water was always available to the animals, but food was withheld for four days. Ten animals subjected to this operation served as controls. The average length of survival was two days. The remaining 50 animals were divided in five groups of 10 to determine the differential advantage of administering sulfathiazole by different routes. The survival of the animals in the different groups demonstrated the importance and therapeutic value of maintaining a high local concentration of sulfathiazole in the area of infection. The value of sulfathiazole when applied locally to the peritoneal cavity is assessed as compared to its usefulness when administered so as to maintain a relatively high general tissue concentration. A suspension of sulfathiazole may be more suitable than the dry powder for intraperitoneal administration, and repeated intraperitoneal injections may be advisable in generalized peritonitis. The results of this study indicate that the intraperitoneal administration of sulfathiazole should be fortified by maintaining a high systemic concentration of the drug by other therapeutic routes when necessary. The combined use of succinylsulfathiazole as an adjuvant to surgery of the large bowel is advocated.

Acute Abdominal Symptoms from Bite of Black Widow Spider.—The pain produced by the bite is often described as resembling the pain from a pin prick or a small splinter. Frequently patients may pay little or no attention to the bite and may not give the incident in reciting the history of their illness unless specifically questioned. Usually in from one-half to two hours the patient complains of cramping pains which have their origin in the muscle groups near the location of the bite. When the bite is on a lower extremity or the genitalia the cramps are first noted in the thighs and hips. In a short time the pain is apt to spread to the abdomen and to be excruciating, comparable in severity to that caused by renal colic, perforated ulcer or coronary occlusion. Examination of the abdomen reveals a boardlike rigidity, although the abdomen usually moves with respiration. There is less tenderness than one would expect to be present in peritonitis producing such extreme rigidity. The temperature is apt to be normal when the patient is first seen, but fever is likely to develop a few hours later. The great majority of patients recover completely in from one to three days. Specific antiserum given early after the bite seems to be the most rational therapy. The author reviews 56 cases which were seen in the John Gaston Hospital, Memphis, Tenn., between 1933 and 1942 inclusive. Severe abdominal pain was the most important symptom and boardlike rigidity of the abdominal wall was usually present. There was no fatality.

West Virginia Medical Journal, Charleston

39:185-232 (June) 1943

Operative Wound Healing, Its Management and Evaluation of Technic and Suture Material Employed. R. K. Buford, H. A. Bailey and J. C. Condry.—p. 191.
Phenomena of Normal Senescence. W. E. Vest.—p. 198.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Experimental Pathology, London

24:41-80 (April) 1943

Artificial Antigen with Blood Group A Specificity. W. T. J. Morgan. —p. 41.
Production and Treatment of Experimental Pneumococcic Hypopyon Ulcers in Rabbit. J. M. Robson and G. I. Scott.—p. 50.
Pure Strain of Rous Sarcoma Cells. E. Tenenbaum.—p. 56.
Mechanism of Red Blood Cell Destruction. B. G. Maegraith, N. H. Martin and G. M. Findlay.—p. 58.
Staphylococcus Enterotoxin—with Special Reference to Kitten Test. F. Fulton.—p. 65.
Study of Morphology and Development of Megakaryocytes. J. Japa. —p. 73.

Journal of Mental Science, London

89:161-362 (April) 1943. **Partial Index**

Indications for Prefrontal Leukotomy. T. P. Rees.—p. 161.
Results of Prefrontal Leukotomy in 30 Cases of Mental Disorder. R. Ström-Olsen, S. L. Last and M. B. Brody; with Observations on Surgical Technic by G. C. Knight.—p. 165.
Early Effects of Prefrontal Leukotomy on Disturbed Patients with Mental Illness of Long Duration. E. C. Dax and E. J. R. Smith. —p. 182.
Range and Technic of Prefrontal Leukotomy. F. L. Golla.—p. 189.
Technic of Prefrontal Leukotomy. F. W. Willway.—p. 192.
Technic of Prefrontal Leukotomy. W. McKissock.—p. 194.
Analysis of Matrix (Progressive Matrices) Test Results on 700 Neurotic (Military) Subjects and a Comparison with Shipley Vocabulary Test. H. Halstead.—p. 202.
Objective Study of Mental Imagery: I. Physiologic Concomitants. F. Golla, E. L. Hutton and W. G. Walter.—p. 216.
Etiologic Factors and Reaction Types in Psychoses Following Childbirth. Betty Jacobs.—p. 242.
Maintenance Treatment of Chronic Psychotics by Electrically Induced Convulsions. N. P. Moore.—p. 257.
Observations on Occurrence of Ethnic Element in Involutional Melancholia. R. Gibson.—p. 274.
*Involutional Melancholia: Study of 20 Cases Treated with Theelin. R. Gibson.—p. 278.
Pitressin Diagnosis of Idiopathic Epilepsy. W. Blyth.—p. 284.
One Hundred Depressive Psychoses Treated with Electrically Induced Convulsions. J. C. Batt.—p. 289.
Use of Modified Takata Reaction in Examination of Cerebrospinal Fluid of Certain Psychoses. H. H. Fleischhacker.—p. 297.

Estrone in Involutional Melancholia.—Gibson reports observations on 20 patients treated with estrone (theelin). The effect could be regarded as an important factor in the recovery of 5 patients, all of whom showed evidence of ovarian dysfunction. Signs of endocrine upset were present in 4, and fewer additional factors were ascertainable in this group than in the others. Estrone appeared to have a specific quality. There were 8 patients in whom it seemed to accelerate a convalescence already in evidence, and it produced a sense of increased confidence. The improvement could not be compared with that seen in the first group. At the time of treatment the physical concomitants of the menopause had passed off in 5 of the 8 and were in process of subsiding in 2. Additional factors were more pronounced in this second group and included adverse childhood conditions in 3 patients and abnormal heredity in 6. Four patients were not improved even though they were given much larger doses than the patients who recovered. Endocrine factors were prominent but adverse factors other than those of an endocrine nature reached their maximum in this group, and it appeared possible that the lack of response to estrogen was due to the malignancy of these factors. Conversely, those patients who responded well belonged to the group in which the minimal number of such factors could be ascertained. Three patients were worse after treatment, and here an endocrine mechanism appeared implicated. Polyglandular insufficiency was present and it seemed that estrogen, by upsetting still further the endocrine balance, brought about the deterioration. The administration of thyroid led to recovery in one and improvement in another, while adrenal cortex extract produced transient improvement in the third. This study further illustrates the complex causation of involutional melancholia. Where an element of endocrine dysfunction was present the glandular disturbance seemed of importance in the development of the psychosis. Other factors were also present. Throughout the personality of these patients there kept recurring a tendency to be easily worried, sensitiveness, pronounced conscientiousness, lack of sociability and timidity, so that these seemed characteristic of the usual prepsychotic personality. Heredity and environment played a part.

Lancet, London

1:729-760 (June 12) 1943

Treatment of Injured Workman. H. E. Griffiths.—p. 729.
*Peptic Ulcer: Prognosis in Royal Air Force Patients. A. F. Rook. —p. 733.
Slide Test for Coagulase Positive Staphylococci. Bessie Cadness-Graves, R. Williams, G. J. Harper and A. A. Miles.—p. 736.
Infiltrator for Regional Analgesia. N. B. James.—p. 738.
Agglutination Titers of Normal Sera. H. Schwabacher, M. Ross and H. L. Carruthers.—p. 739.

Prognosis of Peptic Ulcer in Air Force.—Peptic ulcer is a bar to service in the armed forces. In all three British services most men with proved ulceration have been invalided. The proportion returning to duty is probably largest in the Royal Air Force, mainly because the proportion of skilled technicians is high and every attempt is made to keep valuable men. The medical records of over 1,300 persons whose illness was diagnosed as peptic ulceration and reported during the first eighteen months of the war have been examined. Many of these were invalided but a number were retained. The fate as regards service in the Royal Air Force of the 194 with peptic ulceration who were allowed to return to duty has been followed for about two years. After this time just two thirds of the group were still serving and about a third had been invalided. About half of the patients who were fliers returned to flying duties. With regard to this group selected as being worthy of retention in the service, the subsequent history suggests that help in disposal may be obtained from the rank, for the higher the rank the more likely will the patient be able to carry on. Neither the length of history nor any of the various criteria of diagnosis appears to offer any guidance as to whether or not an airman after treatment for peptic ulceration is likely to withstand service life.

1:761-792 (June 19) 1943

Primary Atypical Pneumonia. W. R. M. Drew, E. Samuel and Margaret Ball.—p. 761.
Relation of Cold Agglutinins to Atypical Pneumonia. J. C. Turner, S. Nisnewitz, Elizabeth B. Jackson and R. Berney.—p. 765.
Pulmonary Complications of the Common Cold and Sinusitis: Findings in Mass Radiography. J. A. Kennedy.—p. 769.
*Meningococcic Adrenal Syndromes and Lesions. H. S. Banks and J. E. McCartney.—p. 771.
Treatment of Osteoclastoma. J. F. Brailsford.—p. 776.

Meningococcic Adrenal Syndromes and Lesions.—Banks and McCartney submit evidence that the meningococcic adrenal syndrome is a composite entity. It can be differentiated into a pure adrenal syndrome in which the main organic lesion is confined to the adrenal glands and a mixed or encephalitic adrenal syndrome in which significant lesions are present in both the brain and the adrenal glands. The pure adrenal syndrome does not seem to be invariably fatal. With modern treatment a "recovery adrenal syndrome" is being developed which is specific only in its evolution, happy termination and absence of direct pathologic proof. Evidence is also submitted as to various adrenal lesions which may be present in meningococcic disease. They do not all consist of pure adrenal hemorrhage. Thrombotic necrosis affecting the greater part of the gland is not uncommon. One case is described in which the main lesion appears to be a gross edema of the gland accompanied by focal areas of inflammatory adrenalitis, and in another case composite lesions are described including hemorrhage, thrombosis, edema and focal adrenalitis. There seems to be no justification for the term Waterhouse-Friderichsen syndrome. Eleven cases of meningococcic adrenal disease are described, 8 of which were fatal. Meningococci were isolated from 6 of the patients who died and from 2 of those who recovered. In 4 of those who died no significant organic lesion other than meningitis was found in the brain or the cord, but in the remaining 4 there was evidence of diffuse or focal encephalomyelitis (capillary thrombosis, hemorrhages and peri-

vascular cuffing) or of very gross edema. The former group and also the 3 patients who recovered showed relatively clear consciousness and normal rapid noiseless or acidotic breathing, while those with a cerebral lesion were deeply comatose and had rapid stertorous breathing. Prompt diagnosis and immediate treatment of the infection with sulfonamide compounds, with vigorous replacement therapy for the adrenal crisis, may lead to recovery, at least from the pure adrenal syndrome.

Schweizerische medizinische Wochenschrift, Basel

72:1341-1368 (Dec. 5) 1942

Calcium in Treatment of Renal Diseases. O. Spühler.—p. 1341.
*Lymphatic Reaction in Hepatitis Epidemica. R. F. Landolt.—p. 1346.
Value of Roentgenograms of Neck in Tumors of Larynx and Hypopharynx. F. Urfer.—p. 1353.
Innervation of Blood Vessels. E. Landau.—p. 1355.
Simple and Sensitive Method of Determination of Carbon Monoxide in Atmospheric Air. A. Gigon and M. Noverraz.—p. 1356.

Lymphatic Reaction in Epidemic Hepatitis.—Landolt differentiates Weil's disease, the icterogenic spirochetosis, from a more benign form of jaundice. Hepatitis epidemica is the term that has been applied to the latter. The author describes the symptomatology of this condition on the basis of 12 clinical cases. The sedimentation speed of the erythrocytes is moderately accelerated and this acceleration often persists into the convalescence. The red blood picture shows no essential changes. The white blood picture presents a leukopenia or normal leukocyte values. The differential count discloses a typical lymphatic reaction with a predominantly plasmacellular metamorphosis. Differentiation of hepatitis epidemica from icterus simplex is extremely difficult. The latter condition cannot be regarded as an etiologic unit and some cases of icterus simplex may be sporadic cases of hepatitis epidemica. The lymphatic reaction observed in hepatitis epidemica suggests a relationship to infectious mononucleosis, particularly because the latter condition is often associated with a hepatic swelling and the presence of urobilin and urobilinogen in the urine. Swelling of the spleen is also observed in both diseases. Although these disorders have several points in common, their identity is not likely.

Semana Médica, Buenos Aires

50:739-790 (April 8) 1943. **Partial Index**

Carbuncle by Inhalation: Case. F. F. Inda, I. Natin and Cornelia da Rin.—p. 754.
*Auricular Fibrillation Due to Sulfathiazole Therapy in Case of Mitral Stenosis. J. Opizzi.—p. 762.

Auricular Fibrillation Due to Sulfathiazole.—Opizzi reports 3 cases of auricular fibrillation developing in adults with mitral stenosis while on sulfathiazole therapy for acute tonsillitis. The patients had rheumatic fever years before the occurrence of the acute attack of tonsillitis. The existence of the cardiac lesion was either unknown or it was well compensated. The total dose of sulfathiazole the patients had received in the course of the treatment varied between 5 and 7 Gm.

50:791-850 (April 15) 1943. **Partial Index**

Cervicitis and Its Therapy. R. Araya.—p. 791.
*Hyperglycemic Dyspituitarism. A. D'Angelo Rodríguez and J. M. Puebla.—p. 807.
Intravenous Injection of Colloidal Electric Copper in Bronchial Asthma. J. J. Cluselias.—p. 816.
*Prophylaxis of Measles. F. Bazán and E. Sujoy.—p. 825.

Hyperglycemic Dyspituitarism.—D'Angelo Rodríguez and Puebla describe a syndrome of hyperglycemia observed in patients with diabetes. It is caused by dysfunction of the pituitary gland due to diminution or absence of gonadal hormones. The symptoms of the syndrome are dizziness, headache, rapid increase in weight, eczema, pruritus, loss of appetite, meteorism, diminished libido, menstrual disorders, nervousness, hepatomegaly, increased cholesteremia, moderate arterial hypertension and enlargement of the dextrose tolerance curve. The therapy consists of estrogens and androgens alone or alternating. Six cases of the syndrome are reported. The patients have been observed for more than two years after discontinuation of successful hormone therapy.

Prophylaxis of Measles.—Bazán and Sujoy studied two groups of 37 children who had been given intramuscular injections of either placental extract or blood serum from patients convalescent after measles and who then were exposed to the contagion. The age of the children varied from 6 months to 10 years. The dose of the extract varied from 2 to 8 cc., the dose of blood serum from 3 to 10 cc. The authors found that placental extract and convalescent serum when administered in proper dose produce passive immunity in 81 and 90 per cent respectively of the treated children. The percentage of immunity increases to 90 and 95 respectively if cases of primary measles are disregarded.

Deutsche medizinische Wochenschrift, Leipzig

68:261-288 (March 13) 1942. **Partial Index**

*Hypoglycemia in General Practice. F. Umber.—p. 261.
Prevention of Postanesthetic Pneumonia with Intubation Anesthesia According to Felgner. H. Dennhardt.—p. 264.
Pervitin: Addiction and Intoxication. F. Dittmar.—p. 266.
*Prevalence of Rheumatism in Tropical and Subtropical Countries. W. Büngeler.—p. 268.
Combined Action of Nicotinic Acid Amide and Cortigan on Porphyrinuria During Lead Poisoning. A. Benkö.—p. 271.
Hypoglycemia After Depot Insulin. C. Brentano.—p. 275.

Hypoglycemia in General Practice.—According to Umber, hypoglycemia is characterized by neurosympathetic symptoms such as tremor, weakness, accelerated pulse, palpitation, sweating and hunger and by cerebral psychotic symptoms. The latter as a rule do not appear as suddenly as those of the first group. They develop more gradually and may be preceded by headache, depression and visual disturbances. There may develop aphasia, confusion, temporary unconsciousness, stupor, jactitation, temporary psychosis, compulsive laughing or crying and prolonged loss of consciousness. There may also be pupillary rigidity and a positive Babinski sign. Hypoglycemic attacks often begin with impudent, mischievous and obstinate behavior in otherwise well behaving children. The character of the psychotic reactions in hypoglycemia may be determined by individual psychotic predisposition. Treatment with protamine zinc insulin is more likely to provoke the insidious cerebral symptoms than the sudden neurosympathetic symptoms. Such latent hypoglycemia is not desirable, and great care is necessary in estimating the proper dose of depot insulin. There is a spontaneous hypoglycemia in which insulin medication plays no part. This he further differentiates into that caused by direct insulinism and that caused by indirect insulinism. Hypoglycemia developing in the presence of insulomas or of simple functional hyperplasia of the islands of Langerhans belongs to the first group, whereas that in which hypophysial functions are involved belongs to the second group. In the treatment of hypoglycemia dextrose or levulose is effective. Suitable diet will prevent the attacks. Calcium and atropine derivatives will counteract the sympathetic irritability. In cases in which insular tumors are the cause of the hypoglycemia, surgical treatment may obtain a cure. The patient's constitution, his endocrine and central nervous makeup, is of great importance in the development of hypoglycemia.

Rheumatism in Tropical and Subtropical Countries.—Büngeler points out that variable climatic conditions may prevail in the same latitude as the result of differences in altitude and other factors. This is exemplified by the different climatic regions in the state of São Paulo, which is partly tropical and partly subtropical. Büngeler based his study of the incidence of rheumatic disease in São Paulo on more than 600 postmortem examinations. He recognized as cases of rheumatic disease only those which showed in the heart or the joints or in both the characteristic Aschoff-Geipel nodes, typical nodule-like scars or signs of rheumatic endocarditis or its sequels. Signs of rheumatic disease were present in 54. The incidence of rheumatism is not dependent on climatic factors. Büngeler thinks that rheumatism is just as frequent in the tropics as elsewhere. Rheumatism everywhere is a problem of focal infection. The high incidence of rheumatism in tropical Brazil suggests that the tropical climate has no therapeutic effect on the disease. Elimination of foci of infection is of primary importance in the treatment of rheumatism.

Book Notices

A Manual of Clinical Therapeutics: A Guide for Students and Practitioners. By Windsor C. Cutting, M.D., Associate Professor of Therapeutics, Stanford University School of Medicine, San Francisco. Cloth. Price, $4. Pp. 609. Philadelphia & London: W. B. Saunders Company, 1943.

The introductory chapter in this compendium is on general problems in therapeutics; then there are terse statements of what to do for amazingly large lists of diseases in the following classifications: the various types of infections, other diseases probably infectious, nutritional diseases, vitamin deficiences, endocrine diseases, metabolic diseases, diseases due to allergic states, diseases due to physical agents, diseases of the gastrointestinal tract and the peritoneum, diseases of the pancreas, liver and bile passages, the heart, the peripheral circulation, the blood and spleen, the respiratory system and mediastinum, the genitourinary system, the muscles, bones and joints, the skin, the peripheral nerves, the central nervous system and the mind. Then come appendixes on special procedures, physical therapy, symptoms and treatment of poisoning, diet lists, metric and English equivalents, tables and charts for weight, height and age, abbreviations and other aids in prescribing, clinical physiologic data, quantitative methods for controlling the therapeutic use of drugs, lists of prescriptions, drugs and doses, a list of works of reference and an adequate index. Nearly everything is here; in fact nothing of importance seems to have been omitted save that intangible something which marks the difference between a contribution to medical literature and a mere medical book. This is just a medical book; no one, having once paged through it, would ever think of opening it again merely for the pleasure of reading or for contact with the mind and experience of its author. But the book is filled with dogmatically phrased statements of what to do for what your patient "has," and they may be quickly got at; it will probably enjoy a large sale.

Elements of Food Biochemistry. By William H. Peterson, Ph.D., Professor of Biochemistry, University of Wisconsin, Madison, John T. Skinner, Ph.D., Assistant Chemist, Kentucky Agricultural Experiment Station, Lexington, and Frank M. Strong, Ph.D., Associate Professor of Biochemistry, University of Wisconsin, Madison. Cloth. Price, $3. Pp. 291, with 34 illustrations. New York: Prentice-Hall, Inc., 1943.

The authors state that "the purpose of this book is to emphasize the chemistry of the constituents of food and the chemical changes that these constituents undergo in the process of metabolism." Written to serve primarily as a textbook in food biochemistry for college undergraduates, the book will no doubt prove useful to many other persons as well. The presentation of the various topics of interest is about as elementary as is possible when one considers the numerous chemical formulas necessarily involved in the discussion of any phase of biochemistry. The nine chapters cover carbohydrates, fermentation food products, acidity, lipides, proteins, mineral elements in nutrition, water, vitamins and enzymes. Attempts are made to show the relation of many of the topics to industry and economic life in general. For example, in the chapter on carbohydrates one finds a table setting forth the economic importance of some industries based on carbohydrates; elsewhere other tables deal in similar fashion with fats and proteins. Thirty-four illustrations aid in arousing interest. Important substances like vitamins and pepsin that have been isolated in pure form are discussed and photographs of their crystals presented. Other photographs illustrate some of the vitamin and mineral deficiencies. In the appendix will be found several tables of interest. One gives the proximate composition of many foods, whereas another deals with the occurrence of mineral elements in representative foods, a third with trace elements and a fourth with vitamin content. The usefulness of the volume is further enhanced by an index. For the reader who has had only an introductory course in organic chemistry this book can undoubtedly be recommended. More advanced students, however, will desire a more extended and detailed treatment of the subject than is offered in this volume.

The Pharmaceutical Recipe Book (R. B. III). By Authority of the American Pharmaceutical Association. Prepared by the Committee on Recipe Book of the American Pharmaceutical Association. Third edition. Cloth. Price, $5. Pp. 551. Easton, Pa.: Mack Printing Company, 1943.

As stated in the preface, the Recipe Book represents the outcome of an effort of the American Pharmaceutical Association to place in the hands of the practicing pharmacist a reliable and comprehensive book of recipes applicable to his business. The book is divided into several parts relative to the various types of formulas. The edition represents a complete revision of this formulary with a view of effectiveness of the preparations included and new ones gleaned from the medical literature, hospital formularies and foreign compilations. The sections on podiatry (chiropodologic), dental and veterinary products and cosmetic preparations have been revised. Many new features have been introduced, such as a table of Latin terms and equivalents, a glossary of synonyms, a table of acceptable coal tar dyes, a vitamin synopsis, and sections devoted to diabetic and ophthalmic preparations. However, the section on photographic formulas has been deleted. The book lends little value to the physician but a hand to medical quackery. Nevertheless it is an advancement over the usual polypharmaceutic mixtures or imitation "patent medicines" heretofore exploited by the publishers of pseudoscientific magazines. The volume is to be recommended in that it does not make any claims for remedial action, assuming no responsibility for the therapeutic uses. The text contains some fourteen hundred formulas.

Victories of Army Medicine: Scientific Accomplishments of the Medical Department of the United States Army. By Edgar Erskine Hume, Colonel, Medical Corps, United States Army. Cloth. Price, $3. Pp. 250, with 79 illustrations. Philadelphia, Montreal & London: J. B. Lippincott Company, 1943.

Colonel Hume is at this writing in charge of the medical aspects of government in Sicily. His book is largely based on lectures delivered in 1942 at the College of Physicians of Philadelphia and the Johns Hopkins University, also the 1943 Beaumont Lecture before the Wayne County Medical Society in Detroit. The great scope of interest is indicated by sections on anthropology, ornithology and surgery. These considerations are followed by advances that developed with each of the great wars in our history. There are chapters on the various divisions of the Army Medical Department, lists of men who have served as librarians in the Army Medical Library, commandants in the Army Medical School, lists of general hospitals and much other valuable material. There are also great numbers of portraits of men who have contributed greatly to the work of the Army Medical Department. The volume is an excellent compilation of exceedingly useful material relative to the medical services of our armed forces. The useful information that it makes available should cause its addition to every medical library.

Chemistry and Methods of Enzymes. By James B. Sumner, Professor of Biochemistry, Cornell University, Ithaca, New York, and G. Fred Somers, Instructor in Biochemistry, Cornell University. Cloth. Price, $5. Pp. 365, with illustrations. New York: Academic Press, Inc., 1943.

Since each of the countless chemical reactions which take place in living cells are catalyzed by enzymes, these substances may properly be considered as the most important constituents of cells. Enzymatic reactions are, moreover, generally specific in nature, so that each cell must contain a great many enzymes. It is estimated, for example, that liver cells carry out over a thousand chemical reactions involving oxidation, hydrolysis and synthesis and that each of these reactions is catalyzed by a specific enzyme. Only a small fraction of these enzymes have thus far been isolated and studied, but new ones are constantly being discovered and the literature on enzyme chemistry is growing rapidly. In the present book the authors present a general survey of modern enzyme chemistry without describing in detail any particular enzyme or class of enzymes. The subject matter is divided into four parts. Part 1 deals with the general properties of enzymes. Part 2 contains seven chapters dealing with such hydrolytic enzymes as esterases, carbohydrases, nucleases, amidases and proteases. Part 3 consists of nine chapters dealing with various classes of oxidative enzymes.

Part 4 contains a chapter on hydrases and mutases and a final chapter on carbohydrate metabolism in which the authors show how individual enzymes fit into the general picture of carbohydrate utilization in cells. Throughout the book important members of each class of enzymes are discussed briefly from the standpoint of history, occurrence, action, specificity, activity measurements, activation and inactivation, preparation and properties. These brief descriptions of the important properties of individual enzymes, together with the many hundreds of references to the original literature, serve to make this a very useful book for students and workers in this important field.

Annual Reprint of the Reports of the Council on Pharmacy and Chemistry of the American Medical Association for 1942, with the Comments That Have Appeared in The Journal. Cloth. Price, $1. Pp. 207. Chicago: American Medical Association, 1943.

Through the years the size of this volume has grown with the increased work of the Council on Pharmacy and Chemistry until the present edition has the same number of pages as the book published in 1908, which covered the Council's first four years of activity. This volume epitomizes that phase of the Council's work which may be said to be collateral to the "acceptance" of drugs—the informative consideration of current medical problems in the interest of rational therapeutics. It contains reports of studies by private investigators which were originally published in THE JOURNAL under the sponsorship of the Council, such as preliminary discussions of new developments in therapeutics and timely articles on the status of recognized agents as well as reports of omission or rejection of products from New and Nonofficial Remedies. It also offers a record of current decisions on matters of Council policy.

Several of the reports are of particular interest for various branches of medical science: the use of bulk ether in anesthesia, the absorption of surgical gut (catgut), the higher types of antipneumococcus rabbit serum, the surgical and medical treatment of animals with experimental hypertension and the status of racemic epinephrine solutions for oral administration. The reports in this small compact volume represent expert medical consensus and are proffered to aid in the consideration of the value of therapeutic agents.

Methods for Diagnostic Bacteriology: A Complete Guide for the Isolation and Identification of Pathogenic Bacteria for Medical Bacteriology Laboratories. By Isabelle G. Schaub, A.B., Instructor in Bacteriology, Department of Pathology and Bacteriology, Johns Hopkins University School of Medicine, Baltimore, and M. Kathleen Foley, A.B., Bacteriologist in Charge of the Diagnostic Bacteriological Laboratory of the Medical Clinic, Johns Hopkins Hospital, Baltimore. Second edition. Cloth. Price, $3.50. Pp. 430. St. Louis: C. V. Mosby Company, 1943.

In the second edition of this laboratory guide in bacteriology there has been added a new section on laboratory procedure in outline form and methods for the quick identification of microscopic organisms based chiefly on their colony characteristics. The format of the manual is so arranged that a blank page faces each printed page, allowing for the addition of notes to meet the bacteriology worker's specific needs. In a sense there is no "routine" bacteriologic procedure, as the methods used depend more often than not on the diagnostic acumen of the worker. What this manual attempts to present is a specific detailed outline of bacteriologic laboratory methods to suit a large number of the more usual clinical cases. The methods presented are entirely modern and have the advantage of being the procedure actually used at the Johns Hopkins Hospital Laboratory. This is not an elementary textbook. It is intended as a guide for the fairly experienced worker and as such probably has considerable usefulness.

Rehabilitation of the Tuberculous. By H. A. Pattison, M.D., F.A.C.P. Cloth. Price, $2.50. Pp. 186, with illustrations. Livingston, Columbia County, New York: Livingston Press, 1942.

The author has been for twenty-five years concerned in the field of rehabilitation of the tuberculous. Hence this book is among the most authoritative works available in the field concerned. Sanatorium treatment, vocational training, family relief, marriage, mental aspects, allergy and the human constitution are discussed. There are also, in the second part of the book, excellent descriptions of special projects such as those at Saranac Lake, Papworth Village and many another center of rehabilitation and sheltered workshops here and abroad.

Emotional Hygiene: The Art of Understanding. By Camilla M. Anderson, A.B., M.D., Consulting Psychiatrist for the American Red Cross. Cartoons by Dorothy G. Stevenson. Third edition. Cloth. Price, $2. Pp. 253, with illustrations. Philadelphia, New York & Montreal: J. B. Lippincott Company, 1943.

This is a much improved edition of a book which has been definitely successful in aiding individuals to adjust themselves. The author is a practicing psychiatrist with an excellent background, and, as we said in the review of the first edition, "This is one of the few books on mental hygiene sufficiently well written and widely enough applicable so that it might be given to the interested reader without medical training who requests a book on this subject. There are many chuckles and pert illustrations, both verbal and pictorial, and practical cases are taken up and discussed in an intelligent manner." It deals with the need of the patient to be aware that he should grow up, that he should not run away from problems, and there is also a discussion of psychiatric nursing, as the book is one as much for the psychiatric nurse as it is for the layman who would like to read something enlightening with regard to minor problems. It is a safe book to give to readers who are interested in their own problems, provided these problems are not so serious that the reader is likely to get numerous disorders, as is so common in medical students; that is, identification of a wholesome personality with the unwholesome picture described in the volume. Certainly no book can supplant the therapist, but, in this day and age of reading on every subject, when the patient demands a book this is one which can be given to him.

Diagnosis of Uterine Cancer by the Vaginal Smear. By George N. Papanicolaou, M.D., Ph.D., Department of Anatomy, Cornell University Medical College, New York, and Herbert F. Traut, M.D., Department of Obstetrics and Gynecology, Cornell University Medical College and New York Hospital. Cloth. Price, $5. Pp. 47, with 11 colored plates. New York: Commonwealth Fund; London: Oxford University Press, 1943.

This is a descriptive atlas of the cells in vaginal smears under various conditions, normal and pathologic, with special emphasis on the diagnostic value of such smears in carcinoma of the cervix and the fundus of the uterus. The preparation and staining of vaginal smears is described in detail. The procedure appears to be simple and suitable for routine use. The morphologic appearances on smears are excellently illustrated in eleven plates of drawings and photomicrographs, all in colors. "Patient and repeated search of multiple preparations by well trained microscopists is essential to success." It is pointed out by the authors that the vaginal smear cannot be depended on for the ultimate diagnosis of uterine carcinoma in the place of biopsy and microscopic sections. The evaluation of individual cells or small groups of cells is more difficult than of carcinoma in tissue sections. But recognition of carcinomatous cells in vaginal smears may lead to the diagnosis of carcinoma while it is still in the early and superficial stage. The atlas is based on the examination of specimens from some 3,000 women and will be of valuable help to all who are interested in the systematic study of vaginal smears.

Urine and Urinalysis. By Louis Gershenfeld, P.D., Ph.M., D.Sc., Professor of Bacteriology and Hygiene and Director of the Bacteriological and Clinical Chemistry Laboratories at the Philadelphia College of Pharmacy and Science. Second edition. Cloth. Price, $3.25. Pp. 304, with 42 illustrations. Philadelphia: Lea & Febiger, 1943.

This publication will be welcomed by practitioners and others who are especially interested in the analysis of the urine. Much new material has been added for this edition and the book has been thoroughly revised. The author covers the subject ably and completely. First he discusses the structure and function of the kidney, the definition of urine and the collection of samples. He continues with the physical and chemical characteristics of the urine, its pathologic constituents and its qualitative, quantitative and microscopic analysis. The book is completed with a section of special urinary tests and tests of kidney function. The discussions of the practical importance of the various tests are excellent. However, the book will be found to be too detailed for the average laboratory worker, who is interested usually in but one good test for any particular constituent of urine. For workers interested in this subject, the book is unqualifiedly recommended.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

SAFETY LENSES FOR INDUSTRIAL USE

To the Editor:—**In one of our plants we have a ruling that all employees must wear safety lenses. We have had some criticism from some members, who state that certain local physicians and opticians have advised them that the wearing of such lenses could injure their eyes permanently. 1. Has thickness of safety glass any bearing on prescription glasses? 2. Is there any corrective effect or magnification in the clear lens glasses? 3. Will clear lens safety glasses injure the eyes of a person not now requiring correction or hasten the day when they may need correction? 4. Is there any advantage of a flat clear lens over a curved clear lens? 5. Must curved lens glasses be fitted more exactly in relation to the eye than a flat lens? 6. Could clear lens safety glasses cause bloodshot eyes or nauseate a person not requiring glasses? 7. What are the allowable limits in grinding regular prescription lenses? 8. What are the allowable limits for clear safety glasses lenses?**

H. W. Garten, M.D., Fort Wayne, Ind.

ANSWER.—1. For all practical purposes, no. Even clear white glass absorbs a certain proportion of visible rays of light (6 per cent or more, depending on its thickness). Objects never appear exactly the same through glass as they do without the glass because of this factor of energy absorption by the glass. Indeed, physicians as well as lighting engineers should take this factor into consideration when advising regarding the amount of light workmen need on the job. Occasionally a person is found who is annoyed by the almost negligible difference in apparent size of objects seen through curved glasses of appreciable thickness, especially if there is a notable difference in the prescription for the two eyes. Indeed, it is on this principle that differences in size are corrected—the so-called aniseikonic lenses. The aniseikonic factor does exist, but undoubtedly it is almost negligible. Of far greater importance is the exact correction of the refractive error. If the glasses have no correction or if the correction is approximately the same for the two eyes, and if the glasses are of the same curvature and thickness, the difference of appearance of objects with and without goggles is the same as the difference in viewing an object in space through a pane of glass and without the pane of glass interposed.

2. See answers to 1, 7 and 8.

3. No. On the contrary, many eyes are saved by wearing goggles. Industrial surgeons always ask workmen whose eyes are injured "Where were your goggles?" And almost invariably there is a sheepish answer such as "I thought I wouldn't need them at the moment."

4. No. The curved clear glass will resist impact better than the flat glass. Also, because of the eyelashes, the curved glass goggles can be fitted closer to the eyes and give a greater "field of vision." See also answer to 1. Mr. C. A. Partenheimer of the American Optical Company says "In very few cases we find some workmen prefer a flat lens to a curved lens, but 95 per cent of our customers are more than anxious to have us furnish the curved clear lens; due to the fact that today's production is not sufficient to permit us to supply the demand for curved clear lenses, we have been obliged to supply thousands of pairs of flat clear lenses much to the dissatisfaction of our Safety trade. We might state that a curved lens is an approximation of the curve of the eyeball—is capable of rendering more space for eyelashes, thus permitting the goggle to be fitted close to exclude foreign matter. It deflects flying objects much more readily than a flat lens and is capable of withstanding much more severe impact and, last but not least, it does not permit annoying reflections that are often present when flat lenses are mounted in Safety goggle frames."

5. Care should be taken to fit all goggles so that they are comfortable, are held in the proper position before the eyes, and give clear vision for the job. If the worker has eyes which see objects of different size or if he has pronounced inequality in the strength of the prescription for the two eyes, special care should be given to filling the order for curved glass goggles.

6. Probably not. Many people depend on the air to dry the normal tear supply; such may find that any glasses and especially goggles interfere with nature somewhat. Many people perspire easily, and the sweat often collects in the goggle cup and may be slightly irritating at first. After a few days, however, nature usually adapts itself, if the goggles are well fitted and well ventilated. Otherwise the workman may be compelled to take them off occasionally to wipe his brow and his eyes and to clean the goggles. If he wipes his eyes with a dirty handkerchief he is apt to get red eyes. The nausea is immaterial as compared to the loss of an eye. Nausea may develop in a workman for any one of many reasons—the boss, the foreman, the working hours, the job, his fellow workmen and the like.

7 and 8. In the 1938 edition of the National Bureau of Standards Handbook H 24 "American Standard Safety Code for the Protection of Heads, Eyes and Respiratory Organs," issued by the U. S. Department of Commerce, National Bureau of Standards, page 6, paragraph 16, appears the following:

"General Requirements for Glass.

"(*a*) All Glass.—Glass for lenses and windows of protectors shall be hard, substantially free from striae, air bubbles, waves and other flaws. Except when the lens is ground to provide proper optical correction for defective vision, the front and rear surfaces of lens and windows shall be smooth and parallel within the following limits:

"Windows and cover glasses for same, 35 minutes of arc (½ prism diopter).

"Lenses and cover glasses for lenses, 9 minutes of arc (⅛ prism diopter).

"The glass shall not be negative in refractive power in any meridian, shall not have a positive refractive power in any meridian greater than 0.12 diopter, and shall not have a greater difference in refractive power between any two meridians than 0.06 diopter.

"(*b*) Goggle Lenses.—All lenses shall have dimensions not less than 1½ inches (38 mm.) in the vertical direction and 1¾ inches (44.5 mm.) in one horizontal direction. It is recommended that circular lenses not involving optical correction be of a uniform diameter of $1\frac{97}{100}$ inches (50 mm.)."

As a matter of fact, during wartime we often have to be content with prescription lenses within ⅛ diopter (0.12 diopter) and a few degrees off axis if the prescription calls for a cylinder under 1 diopter.

UNUSUAL TYPE OF PARALYSIS OF FACIAL NERVE

To the Editor:—**A locomotive engineer aged 54 became suddenly ill with a paralysis of the right side of his face. When I saw the patient three days later I made a diagnosis of Bell's palsy of "rheumatic" origin due to exposure to drafts on the locomotive. There was obliteration of the nasolabial fold, inability to whistle, to raise the right eyebrow and to wrinkle the right forehead, and the mouth drooped, but the right eye could be closed. No disturbance of taste was present. There was periauricular pain and tinnitus of the right ear. Except for a blood pressure of 160/90 and large, tender lymph nodes (the right larger than the left) at the angle of the lower jaw and swelling of the right side of the face (especially around the eye) the physical examination was negative. The following day the systolic blood pressure dropped to 136 and has since remained normal. Application of moist heat has reduced the swelling of the face. The lymph nodes have decreased in size and are much softer. The temperature has remained normal. Is this a case of Bell's palsy (all textbooks stress the fact that inability to close the eye—Bell's phenomenon—is invariably present)? Will tonsillectomy have a beneficial effect on this condition, and, if so, how soon could it be done? What other measures are indicated? Is there any substitute for faradization, which is not available in a town of the size of this? Any suggestion will be appreciated.**

Mauro Rosenberg, M.D., Auburn, N. Y.

ANSWER.—The onset of the weakness of the right side of the face was indeed similar to that found in Bell's palsy, ordinarily due to exposure. There are, however, various types of paralysis of the facial nerve and a considerable number of variants have been observed, particularly in the last few years. These variants have been, in all probability, due to neurotropic virus infection and are not of the same type ordinarily associated with the clinical syndrome known as Bell's palsy. In the type described by Bell it is indeed true that the inability to close the eye on the affected side is almost inevitably present, although it cannot be said that this is a fixed rule. Because the eye could be closed does not preclude a diagnosis of paralysis of the facial nerve of some type. When there is associated with this tenderness of the lymph nodes at the angle of the lower jaw and a swelling of the right side of the face, the symptoms are suggestive of more than an ordinary Bell's palsy.

Tonsillectomy during the acute stage of the disease should not be advised. In a patient of 54, moreover, care should be exercised with regard to ascertaining the degree of infection in the tonsils before they are taken out.

There are no other measures indicated except the ordinary care of a facial paralysis. As long as the right eye can be closed there is little danger of ulceration of the cornea. This is fortunate, as it avoids one of the more serious complications of Bell's palsy. If the paralysis is severe and lasts more than a week or two it is unlikely that the muscles supplied by the facial nerve on the right side would respond to faradism, and galvanism would be the only kind of electricity capable of moving the muscles. If the condition does not clear up after two or three weeks and the faradic response has not returned, galvanic treatment of the muscles is advised, as it allows the muscles to move and thus helps to keep them in their normal physiologic state. It has no effect on the regeneration of the nerve. If the proper galvanic battery is not available, usually one can be rented from a suitable source in a large city.

SURGERY OF PERIPHERAL BRANCHES OF TRIGEMINAL NERVE

To the Editor:—I have observed a number of cases of chronic antrum infection with extensive bone destruction involving the roof of the antrum in which the infraorbital nerve was embedded in dense granulation tissue and had to be removed; in other cases the infraorbital nerve was removed to treat infraorbital neuralgia. In some of the cases the upper teeth were missing before operation. What is known about the harmful effects on the teeth and other structures after removing this nerve? I found only a few unsatisfactory references in the literature. Is anything known about trophic changes in the skin of the cheek following the isolated removal of this nerve? In some cases of infraorbital pain long after previous Caldwell-Luc operations, revision of the antrum showed the infraorbital nerve fibers to be surrounded by dense scar tissue (microscopic examination). In one of the cases we removed part of the infraorbital nerve and left a stump of it exposed, after which the pain in the infraorbital region reappeared. We found at a latter operation that this stump again was embedded in thick scar tissue, and only after removing the entire length of the nerve beyond the posterior antral wall did the pain disappear entirely. In this particular case there was a very annoying burning painful sensation in the region of the nasolabial fold and upper lip. Is such a case similar to what is otherwise known as causalgia?

M.D., New York.

ANSWER.—Various branches of the trigeminal nerve, including the maxillary, have been repeatedly sectioned without causing any "trophic" change in or harmful effects on the skin or the teeth. Destruction of these peripheral branches of the trigeminal nerve was once commonly practiced for the relief of trigeminal neuralgia. The relief so obtained is always temporary, because the amputation neuroma which forms on the end of the nerve and the scar tissue about it soon again supply the peripheral stimuli usually requisite for the development of the painful paroxysms of this disease. It is accordingly not surprising that in the instance cited in the query similar scar tissue irritated this sensory nerve, causing pain which was referred to the peripheral distribution of the involved nerve. The situation was comparable to that seen with amputation neuromas in the extremities. It is not similar to causalgia, which develops with partial lesions of the peripheral nerves, principally the median in the upper extremities. Causalgia is characterized by a most disagreeable burning pain which is commonly associated with emotional reactions on the part of the patient. In addition there are changes in the skin, which becomes cyanotic, light and glossy. The nails curve and grow irregularly. The skin is commonly very sensitive to touch and to drying. The joints become stiff.

BIFOCALS FOR YOUNG PEOPLE

To the Editor:—A local optometrist prescribes bifocal lenses for a large number of young people and children, some of whom are as young as 7 years. The ones who have come to me for subsequent examination show no disturbance of muscle function and no weakness of accommodation. I cannot help but think that this is a harmful procedure yet can find nothing in the literature regarding it. Kindly advise if I am correct in this assumption and also what the immediate and remote effects of this would be on the eye.

M.D., Iowa.

ANSWER.—It is certainly not considered good practice to prescribe bifocals for young people except in the presence of a convergent squint which becomes greater when the eyes are used for near vision. Other than this there is no indication for the procedure except in paralysis of accommodation. The use of bifocals by such young persons would possibly have a tendency to relax accommodation to an extent which would favor the early onset of presbyopia. The physiologic relationship between convergence and accommodation would also be prevented or interfered with and a divergent squint might possibly develop in some of these cases as a later result. One would certainly feel like condemning the procedure entirely except under the conditions previously mentioned.

ANESTHESIA FOR TONSILLECTOMY AND RESUSCITATION IN CHILDREN

To the Editor:—Please advise what the safest and best general anesthetic is for tonsillectomies in children, what precautions to take to prevent sudden respiratory failure in children under ether and the best methods of resuscitation.

M.D., Illinois.

ANSWER.—The safest and best method of general anesthesia for performance of tonsillectomy on children is to give ether by insufflation. Anesthesia may be induced with nitrous oxide, oxygen and ether; it can be maintained by drop ether for a short time, followed by insufflation with ether vapor delivered through a hollow metal hook placed in the corner of the mouth or through a tube connected with a mouth gag.

Precautions that tend to prevent sudden respiratory failure are to avoid too deep a plane of anesthesia, to have the patient's head a little lower than his hips, to keep the throat cleared of blood by using suction, to avoid obstruction of the airway with sponges, to depress the tongue in such a way as not to obstruct respiration, to use pressure in the tonsillar fossae, to control hemorrhage or to tie off bleeding vessels definitely and then, as soon as the operation is over, to discontinue administration of the anesthetic agent and to turn the patient to the prone position so that blood and mucus will drain from the mouth and not accumulate in the throat.

The best method for resuscitaton is to insert an intratracheal tube and inflate the lungs with oxygen or air. If a tube is not available, the oxygen will have to be administered, probably under some pressure, usually by pressing the bag on the gas machine by hand. However, when a tube is not available, accumulation of blood in the throat creates a hazard, as blood may be forced into the trachea while forcing oxygen into the lungs. Thus this danger also obtains when an alternate method of artificial respiration is used, wherein one person presses on the patient's chest and then while he releases his pressure another person presses on the bag of the gas machine to force oxygen back into the chest. This is continued rhythmically and the patient can be kept in moderate Trendelenburg position during the resuscitation. Respiratory stimulant drugs may be used, but it is most important to give artificial pulmonary ventilation immediately.

VITAMIN K TO PREVENT HEMORRHAGIC DISEASE OF NEWBORN

To the Editor:—A patient has a baby due early in June 1943. Her last child was born in July 1941 and lived only ten hours. She was under the care of a doctor who is now in military service, but the death certificate and the mother state that the baby died from hemorrhagic disease of the newborn. The patient says the doctor told her that "the blood would not clot." The woman is a sextipara. Her periods are irregular; she sometimes skips one or two or even three periods. That is the reason I cannot fix the date of her confinement accurately. I should like to know the best way to use vitamin K (and the best form) in order to prevent hemorrhagic disease in this coming baby.

Persis Straight Robbins, M.D., Bradford, Pa.

ANSWER.—It has been recommended by competent investigators that, for prophylaxis, vitamin K in such instances as mentioned in the communication be administered as follows: The mother should be given a daily dose of 1 to 2 mg. of menadione or a similarly potent vitamin K substance in capsules or tablets beginning not more than one month before the estimated date of confinement and continuing up to delivery. If the mother is not seen until labor has begun, she should be given an immediate intravenous injection of 4 mg. of a water soluble preparation. Elevation of the infant's prothrombin level occurs quickly after parenteral injection of a water soluble vitamin K substance in the mother. If more than fifteen hours elapse between the injection of the drug and delivery, it should be repeated. As an added precaution the infant should be given 1 mg. of vitamin K substance intramuscularly soon after delivery. It may be advisable to repeat this dosage twelve hours later to afford added protection.

PROPHYLAXIS OF POLIOMYELITIS

To the Editor:—We are having a slight epidemic of poliomyelitis. Is there anything of value to use prophylactically?

R. L. Johnson, M.D., Pittsburg, Texas.

ANSWER.—At the present time there is no agent that can be used successfully for prophylactic use against poliomyelitis. Several agents have been tried in the past, namely picric acid and aluminum sulfate as nasal sprays, without any significant value in the prevention of the disease. Such measures as avoidance of crowds and needless contact exposures, good environmental sanitation measures with proper disposal of excreta, fly control, pure milk, water and food supplies and good personal hygiene are still the only available procedures.